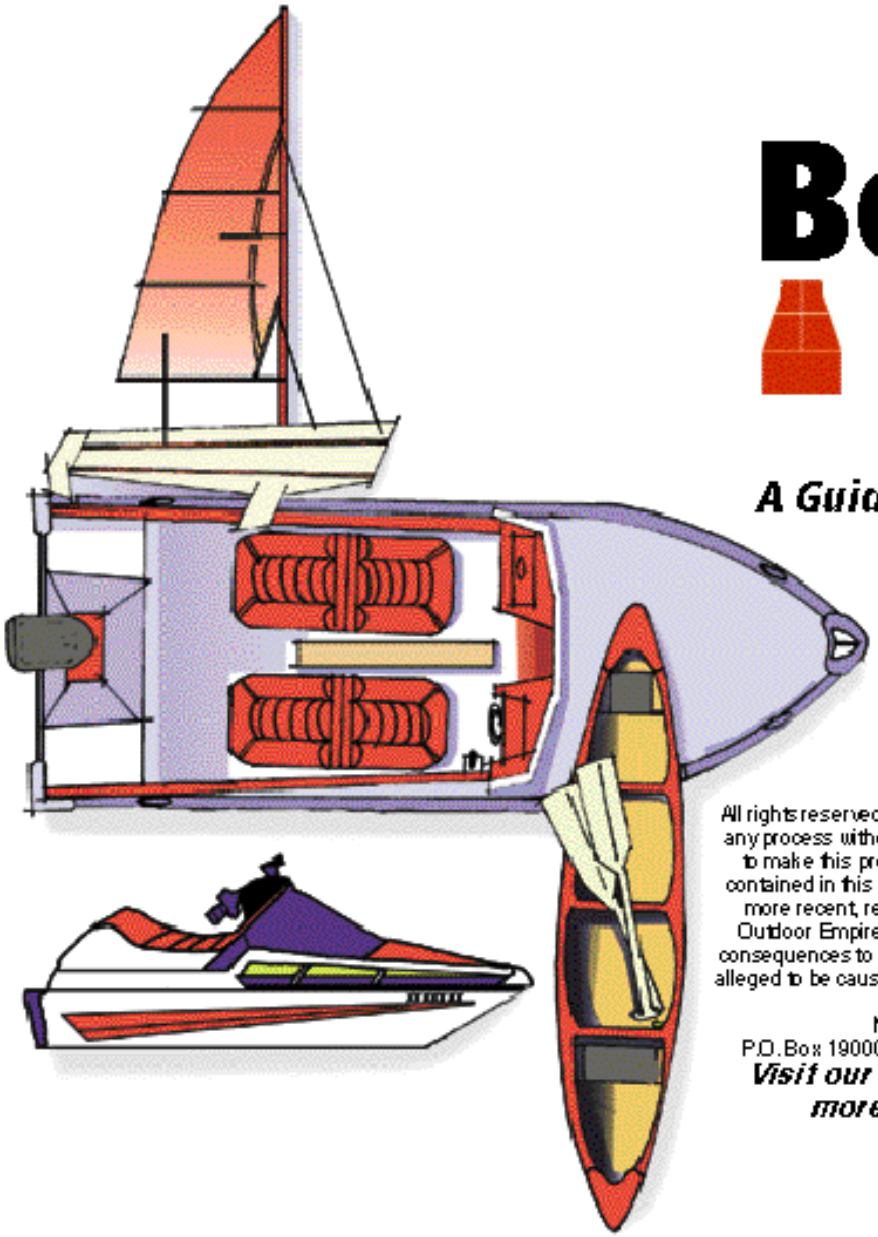

Boating Basics

A Guide to Responsible Boating

PowerPoint Presentation

Boating Basics — A Guide to Responsible Boating
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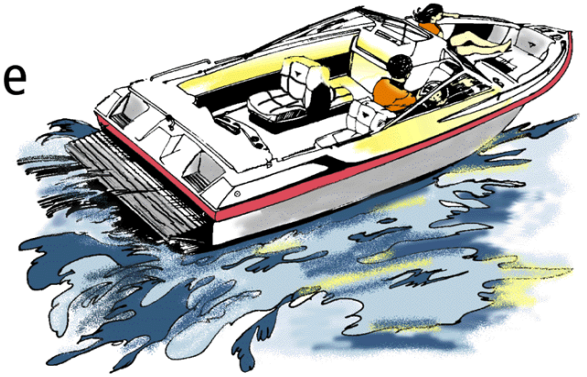
PART 1: ALL ABOUT BOATS

Choosing the Right Boat

A. There are approximately 3,000 boat manufacturers and more than 4,000 different models powered by a variety of outboard, stern drive and inboard engines.

B. In choosing a boat, consider what type of activity and water it will be used in.

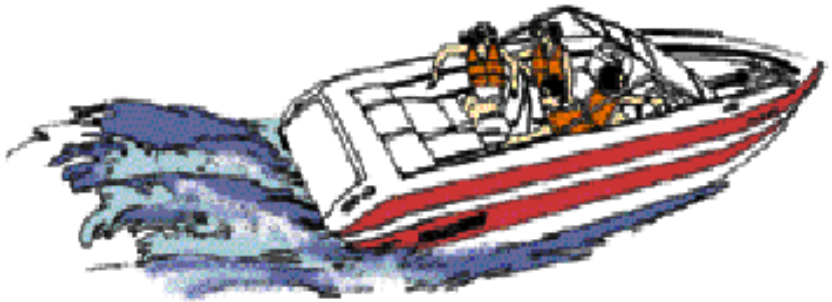
C. Be sure the boat is large enough to handle the intended load so you won't overload.



Classification

Classes of Boats

Class A (less than 16')



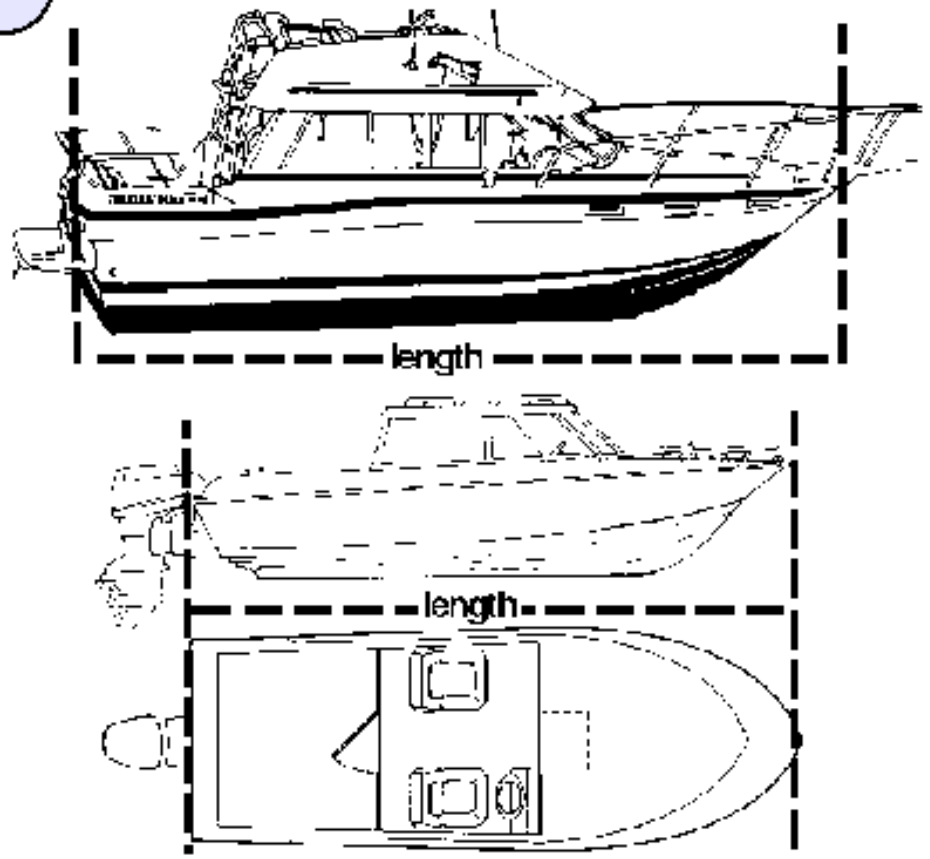
Class 1 (16' to less than 26')

Class 2 (26' to less than 40')

Class 3 (40' to 65')

EQUIPMENT REQUIREMENTS ARE DETERMINED BY BOAT LENGTH

How to Measure Length

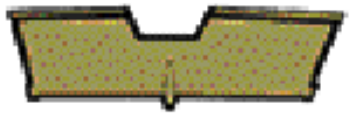


Basic Hull Designs

A **displacement hull** is designed to move through the water...

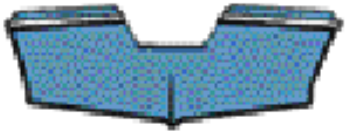
...while a **planing hull** just skims on top of the water and can travel at a much higher speed.

Types of Hulls

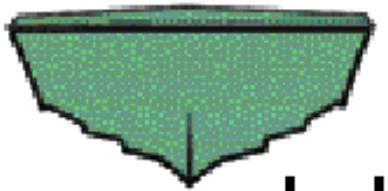


Flat bottom hulls

Round bottom hulls



Vee hulls



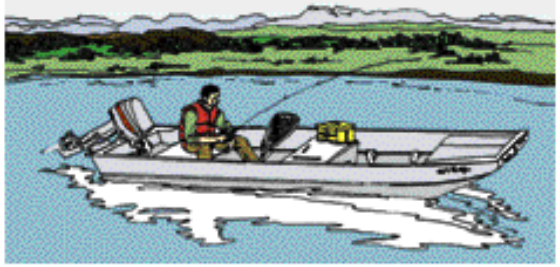
Deep vee hulls

Multi-hulls

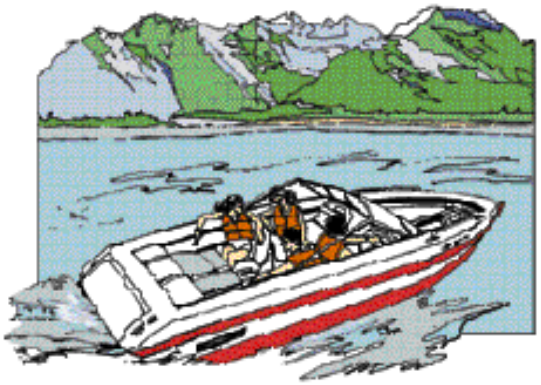
Recreational Boats

Small utility boats and jon boats are widely used for fishing in protected waters.

Utility or jon boats



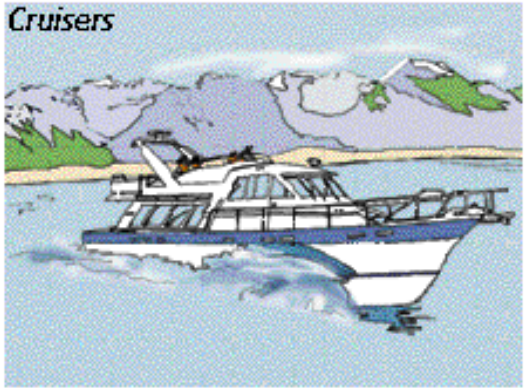
Runabouts



Most runabouts are made of fiberglass or aluminum and are powered by outboard engines; they can be used for fishing, water skiing, and cruising.

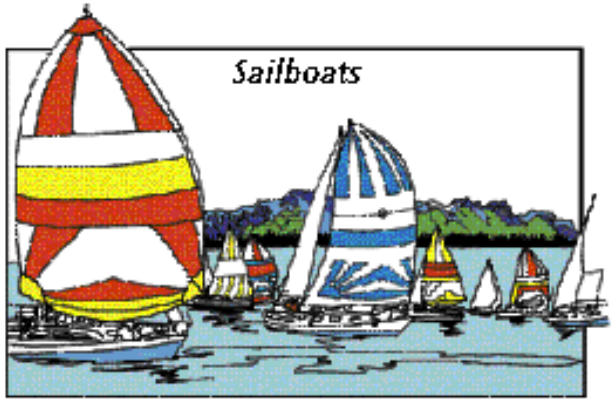
Cruisers are generally 18-50 feet in length and are suitable for overnight or weekend outings.

Cruisers



Personal watercraft

Personal Watercraft are considered to be "Class A Inboard Boats" by the U.S. Coast Guard.

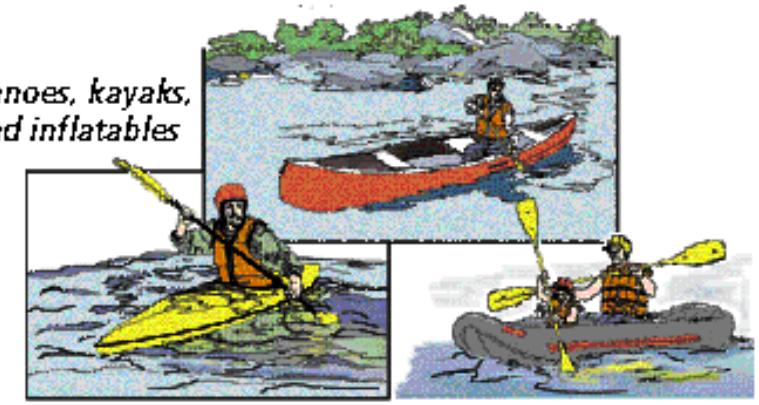


Sailboats come in a variety of sizes and designs for a variety of uses.

Sailboards

Sailboards are a cross between a surfboard and a sailboat.

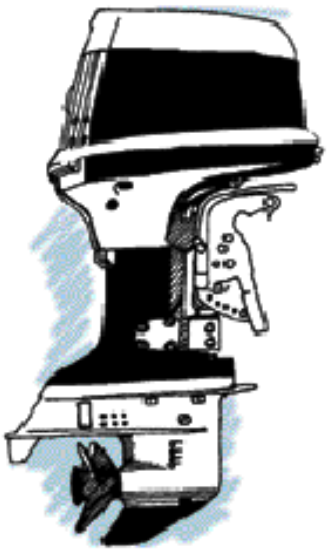
Canoes, kayaks, and inflatables



These are manually propelled with paddles or oars.

Motors

Outboards



- A complete propulsion system from the engine through the transmission to the propeller.
- Range in power from less than 2 HP to 300 HP and in weight from 30 lbs. to over 500 lbs.
- Normally mounted on the transom and use a two-stroke cycle with a requirement to mix oil in the fuel.
- Choosing the right sized motor and propeller combination is important.
- The capacity plate is used as a guide for the maximum power.

Stern Drives

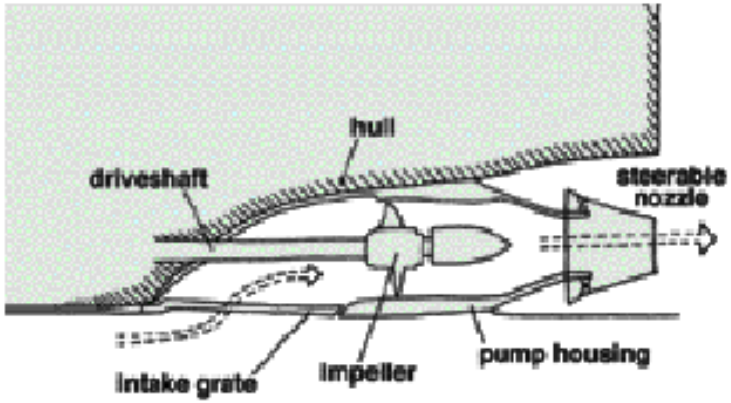
- Use a modified automobile engine mounted inside the boat.
- Gasoline powered, using a four-stroke cycle. Some new stern drives use diesel engines.
- The drive unit swivels much like an outboard for steering control.

Inboard Engines

- Normally found on large boats.
- Motor is attached through a transmission to a fixed drive shaft to the propeller.
- A separate rudder is required to steer.

Jet Pumps

- Draw in water and pump it out at high speed, have a steerable nozzle and no propeller or rudder to endanger rider.



KNOW THE EXPLOSIVE POWER OF GASOLINE!

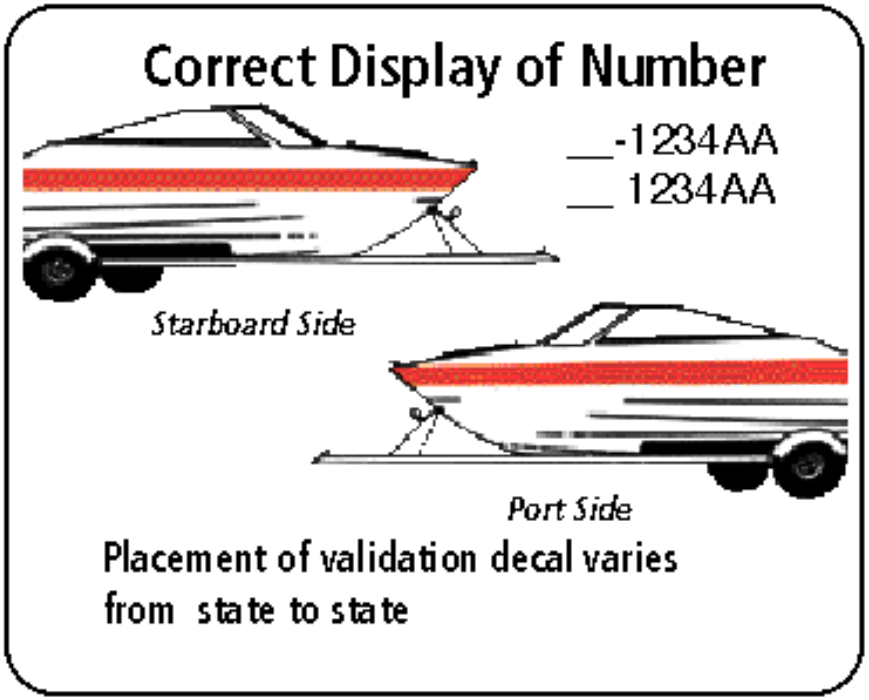
GASOLINE VAPORS ARE HEAVIER THAN AIR AND WILL SETTLE TO THE BOTTOM OF THE BOAT.

ONE CUP OF VAPORIZED GASOLINE = EXPLOSIVE POWER OF 16 STICKS OF DYNAMITE!

PART 2: LEGAL REQUIREMENTS

- Federal regulations require all motorboats to be numbered and allow states to number other recreational boats.
- Registration requirements and procedures vary from state to state.
- Hull Identification Numbers are a boat's identification number. The number is found on the outside of the hull, on the starboard side above the waterline.

Larger vessels (generally over 30 feet) may be documented. Check with the Coast Guard for more information.



Proper Display of Boat Numbers

1. The figures are to read from left to right.
2. They must be displayed on the forward half of each side of the bow of the boat.
3. Numbers must be in bold, block letters of good proportion.
4. Numbers must be not less than three inches high.
5. They must be of contrasting color to the boat hull or background.
6. They must be as high above the waterline as practical.
7. No number other than the number assigned can be displayed on the forward half of the vessel.
8. Letters must be separated from the numbers by spaces or hyphens.
9. Validation decals must be displayed within six inches of the number.

Equipment Requirements

Personal Flotation Devices (PFDs)

- 75-80% of people who die in boating accidents did not use a PFD.
- All children, nonswimmers, and handicapped persons should always wear a PFD. All others are recommended to wear a PFD, but should at least have one properly adjusted and readily available.
- All PFDs must be Coast Guard approved, of the proper size, and in good and serviceable condition.

Personal Flotation Devices

- Most adults need an extra seven to 12 pounds of buoyancy to keep their heads above water. A personal flotation device can provide that "extra lift" to keep you afloat until help comes.
- You must keep your PFD in good and serviceable condition.
- If your PFD is not in good condition, replace it. You may be betting your life on your it!
- You should always wear your PFD. It won't work if you don't wear it. Make sure you wear your PFD if conditions deteriorate in bad weather and water conditions.
- Try on your PFD to see if it fits comfortably snug. Then test it in shallow water to see how it handles.
- To check the buoyancy of your PFD in the water, relax your body and let your head tilt back. Make sure your PFD keeps your chin above water and you can breathe easily. If your mouth is not well above the water, get a new PFD or one with more buoyancy.

How Many PFDs Do You Need?

All boats must have a wearable type PFD for each person on board or being towed. Each PFD must be in good condition, readily available, and the proper size for the intended wearer. In addition, boats 16 feet in length or longer must carry a type IV throwable device.

For example, if there are four people on your 16-foot boat, you must have at least five PFDs—four wearable PFDs and one thowable device.

Personal Flotation Devices

Type I (Off-Shore Life Jacket)

22 lbs. buoyancy

Where:

Best for open, rough or remote water, where rescue may be slow in coming.

Advantages:

Floats you best.
Turns most unconscious wearers face-up in water.
Highly visible color.

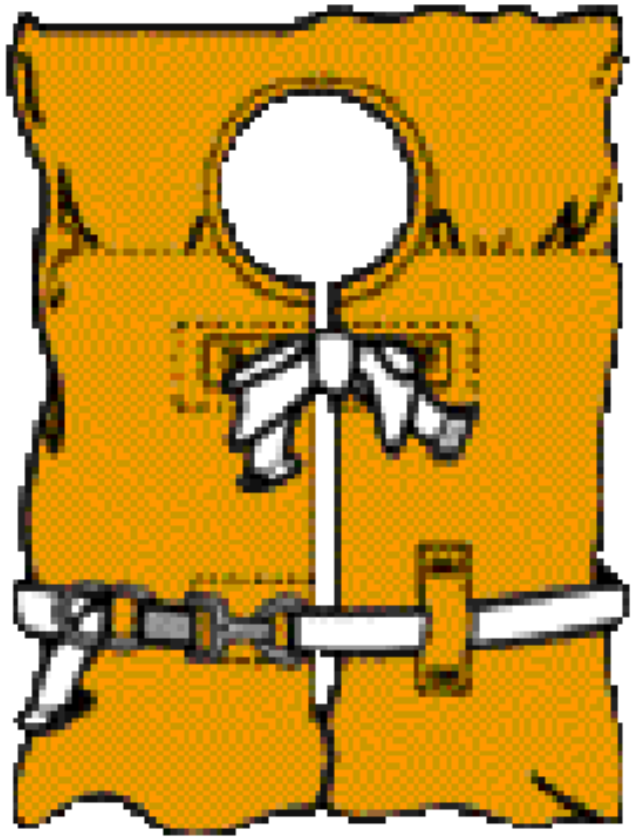
Disadvantages:

Bulky.

Sizes:

Two sizes to fit most children and adults.

Type II (Near-Shore Buoyant Vest)
15.5 lbs. buoyancy



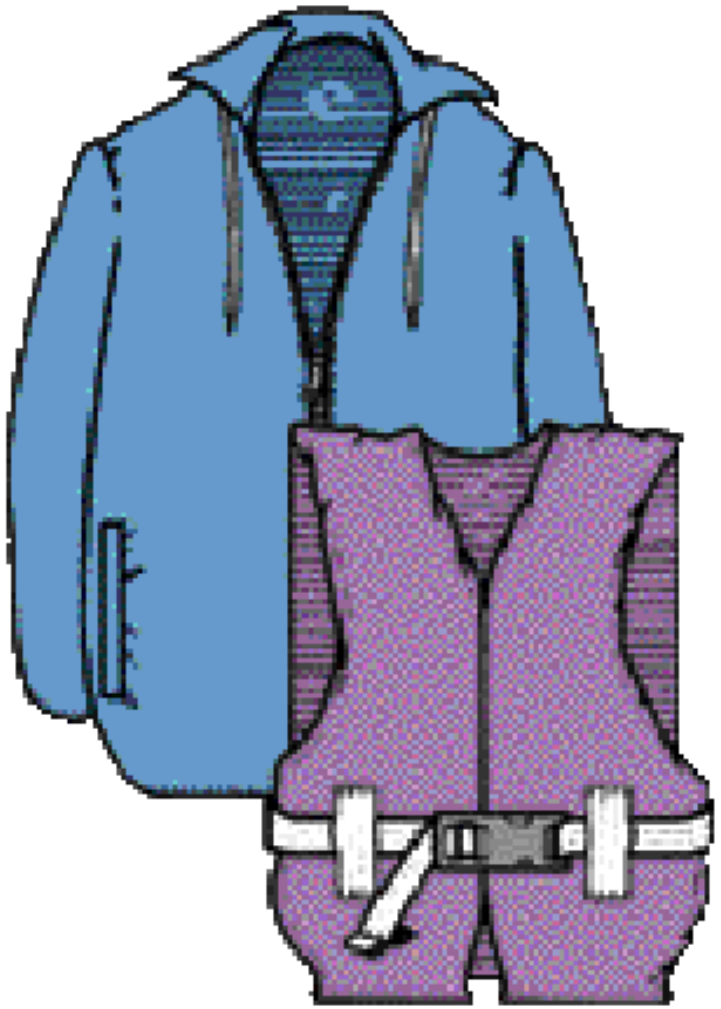
Where:
Good for calm, inland water, or where there is a good chance of fast rescue.

Advantages:
Will turn many unconscious wearers face-up in water. Less bulky, more comfortable than type I.

Disadvantages:
Not for long hours in rough water. Will not turn some unconscious wearers face up in water.

Sizes:
Infant, Child-small, Child medium, Adult.

Type III (Flotation Aid)
15.5 lbs buoyancy



Where:

Good for calm, inland water or where there is a good chance of fast rescue.

Advantages:

Generally the most comfortable for continuous wear.

Freedom of movement for water skiing, small boat sailing, fishing, etc.

Available in many styles, including vests and flotation coats.

Disadvantages:

Not for rough water. Wearer may have to tilt head back to avoid facedown position in water.

Sizes:

Many individual sizes from Child-small to Adult.

Type IV (Throwable Device)

Where:
For calm, inland water with heavy boat traffic, where help is always nearby.

Advantages:
Can be thrown to someone.
Good back-up to wearable PFD. Some can be used as seat cushions.

Disadvantages:
Not for unconscious persons.
Not for nonswimmers or children.
Not for many hours in rough water.

Kinds:
Cushions, rings and horseshoe buoys.

Type V (Special Use Devices)

Where:

Only for special uses or conditions.

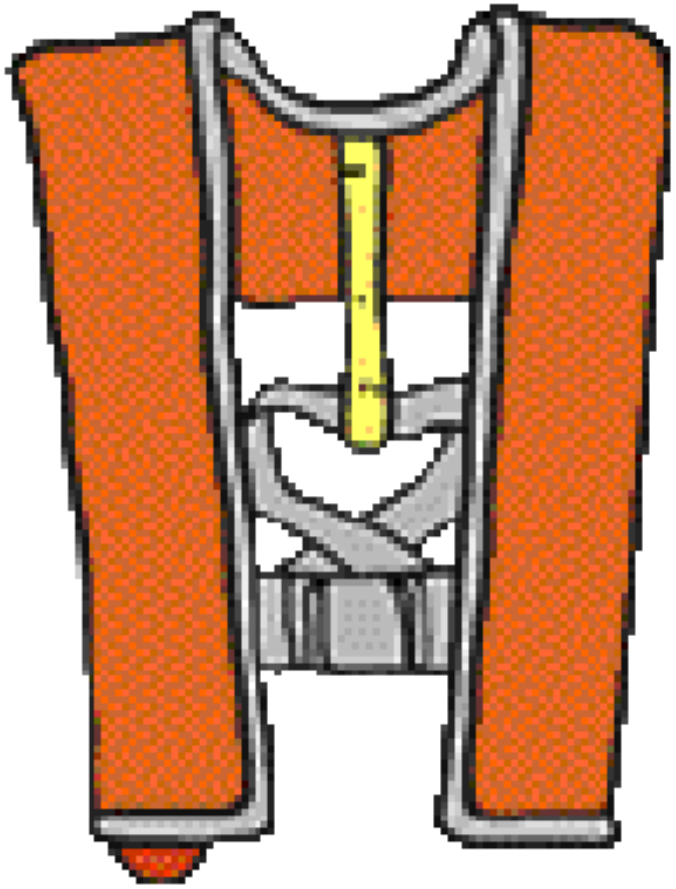
Advantages:

Made for specific activity. Varieties include boardsailing vests, deck suits, work vests, hybrid PFDs and others.

Disadvantages:

See label for limited use.

Inflatables



WARNING:

Inflatables are not recommended for children under 16 and nonswimmers. One should never assume the CO2 cylinder has not been accidentally set off or inflated on its own. Check for air holes by blowing it up by the auto valve and submerging in water and watching for air bubbles. The indicator should be checked every time one uses the inflatable. Caution should be practiced when using an inflatable life jacket!

Caring for Your PFD

Follow these points to be sure your PFD stays in good condition:

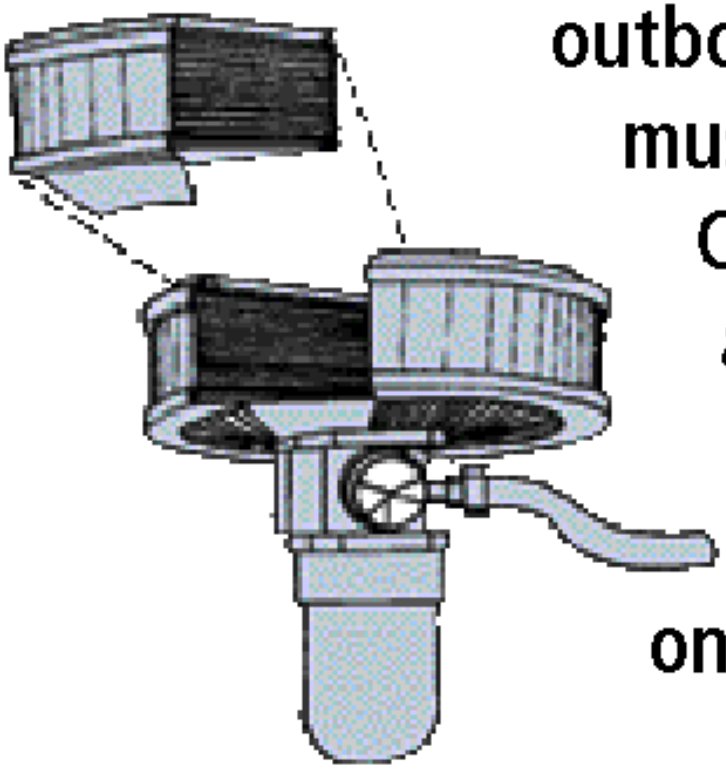
1. Don't alter your PFD. If yours doesn't fit, get one that does. Play it safe. An altered PFD may not save your life.
2. Don't put heavy objects on your PFD or use it for a kneeling pad or boat fender. PFDs lose buoyancy when crushed.
3. Let your PFD drip-dry thoroughly before putting it away. Always stow it in a well-ventilated place.
4. Don't leave your PFD on board for long periods when the boat is not in use.
5. Never dry your PFD on a radiator, heater, or any other direct heat source.
6. Put your name on your PFD if you're the only wearer.
7. Practice throwing your type IV PFD: Cushions throw best underhand.

For protection, all boats should carry U.S. Coast Guard approved fire extinguishers.

Fire extinguishers are classified by letters and numbers to indicate their size and the type of fire they are effective against.

A – Combustible solids (wood, paper)
B – Flammable liquids (oil, grease)
C – Electrical fire
D – Combustible metals (magnesium)

Backfire Flame Arrestor



All motorboats, except outboards and diesels, must have a U.S. Coast Guard approved backfire flame arrestor system on each carburetor.

Ventilation

- Ventilation systems are required on gasoline-powered boats with enclosed engines or fuel tanks. The system design and installation is a manufacturer's requirement. The operator is required to keep it in good operating condition.
- On boats with a power blower, the blower should be operated for at least four minutes prior to starting the engine.

Whistles, Horns and Bells

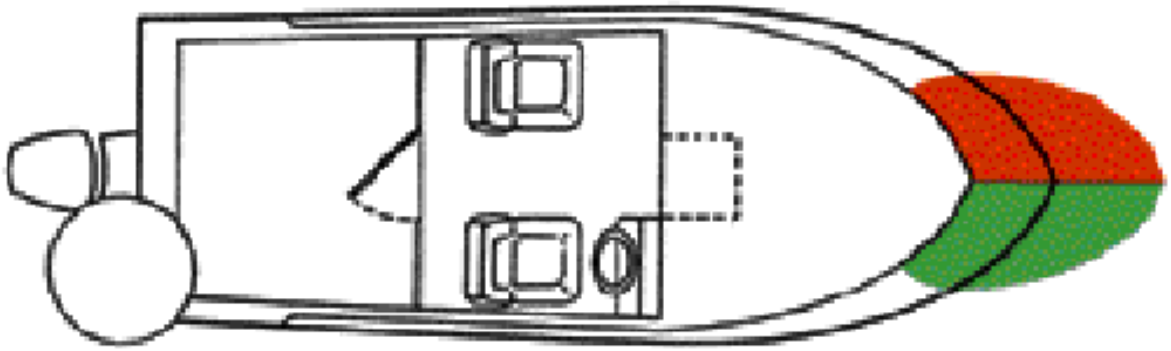
- Boats must be equipped with a means of producing an efficient sound signal.
- The minimum is producing a four-second blast audible for ½ mile.
- Sound signals are required for passing and meeting situations, and in fog.
- In inland rules, a signal normally indicates intention.
- In international rules, signals normally indicate an action.
- The danger signal is five or more short blasts.

Light Requirements for Pleasure Craft

Location of lights on vessel	Visible range		Degrees of arc lights
	Less than 12m.	12 m. but less than 20 m.	
Masthead	2	3	225°
All-round	2	2	360°
Side Lights	1	2	112° each color
Stern light	2	2	135°

All vessels must show required running lights between sunset and sunrise and during periods of restricted visibility.

Red Light Port (Left)



White Light
Stern

Green Light
Starboard (Right)

Light Requirements for Powerboats

Figure 1

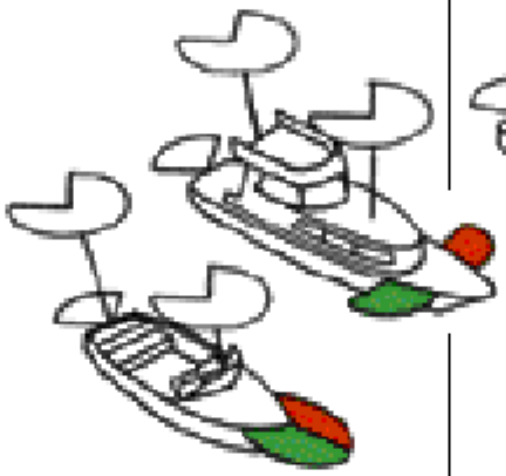


Figure 2

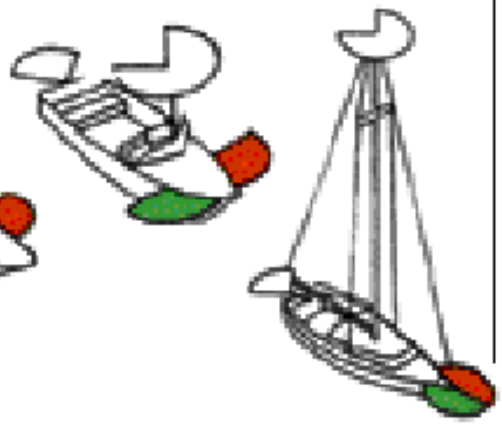
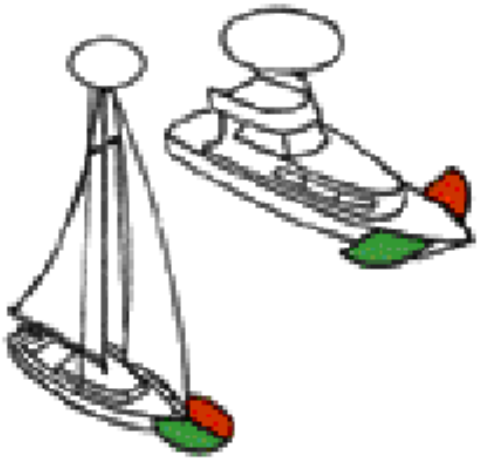


Figure 3



Light Requirements for Sailboats

Figure 4

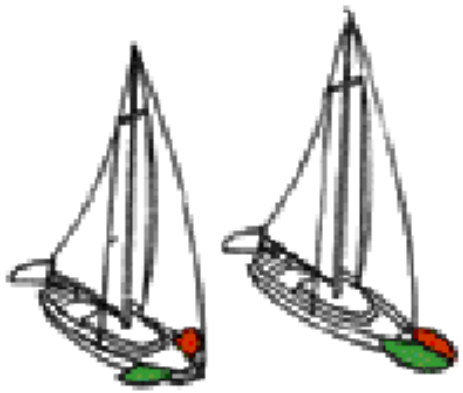


Figure 5

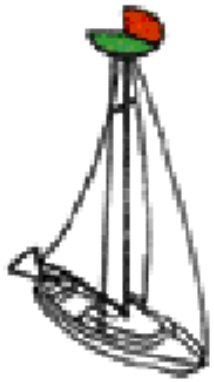
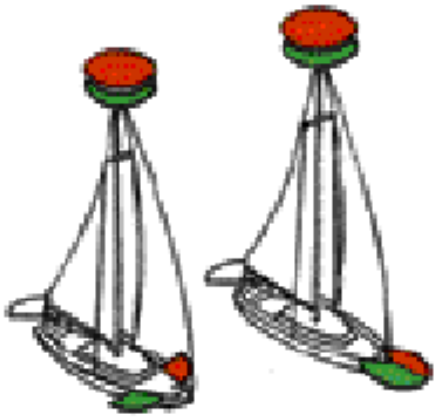
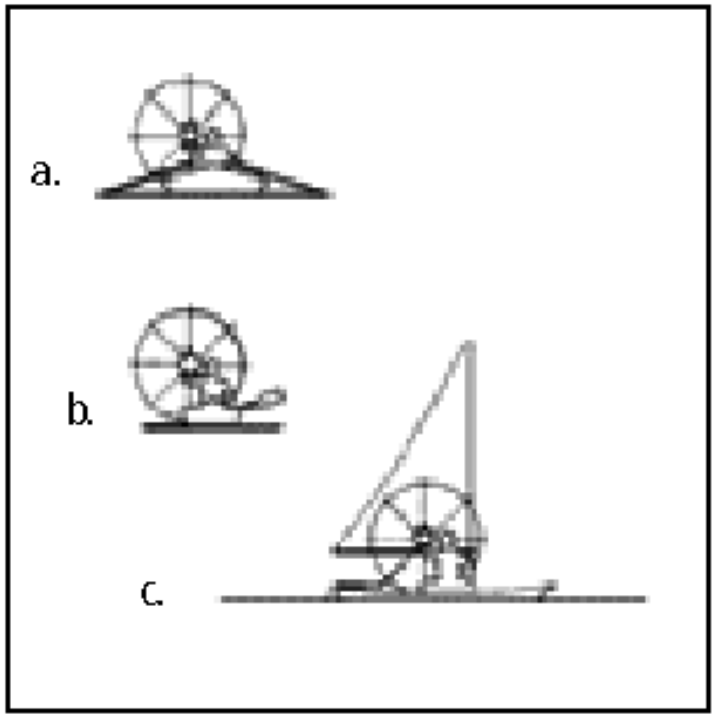


Figure 6





Sailboat using sail alone, less than seven meters in length:
If impractical to display lights in figures 4, 5 or 6, a single white light may be displayed in time to prevent a collision (figure 7c).

Row Boats, Paddle Boats or PWC

One all-around white light ready to display in time to prevent a collision.

PART 3: NAVIGATION RULES

- Just as drivers must follow certain regulations on the highway, there are basic safety rules that apply on the water to make boating safer and more enjoyable for everyone. Use the following only as guidelines. Check with your state boating officials for specific requirements.
- The U.S. Coast Guard has enforcement authority on federal waters. In addition, each state has enforcement officers responsible for all state waters.
- An enforcement officer has authority to stop and board boats to check for compliance with federal or state law.
- The Coast Guard and most state officers can stop a voyage (the boat must return to the closest dock until the hazardous situation is corrected).

Particularly Hazardous Conditions

1. Not enough Personal Flotation Devices (PFDs) or fire extinguishers.
2. Overloading. (Check capacity plate information.)
3. Failure to display required navigation light.
4. Fuel leakage.
5. Fuel accumulation (other than fuel tanks).
6. Failure to meet ventilation requirements.
7. Failure to meet carburetor backfire flame arrestor requirements.
8. Excessive leakage or accumulation of water in the bilge.

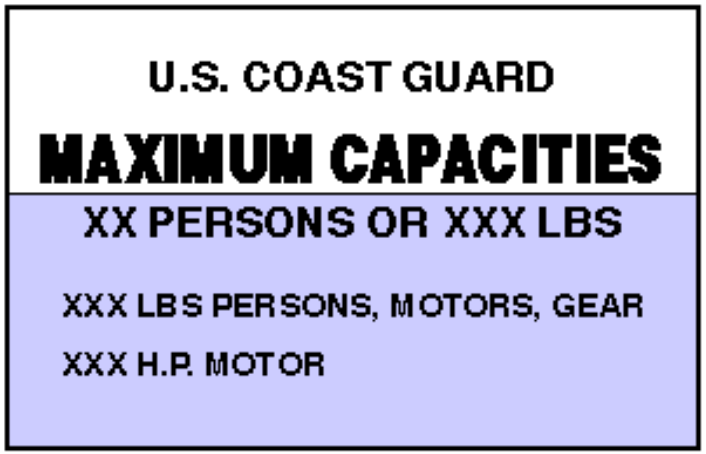
Negligent Operation

Negligent operation is the failure to exercise the degree of care necessary to prevent the endangering of life, limb, or property of any person. It can be the result of operator ignorance, inattention, indifference, or carelessnesss. Some examples of negligent operation include:

1. Excessive speed in a congested area.
2. Excessive speed in fog or stormy conditions.
3. Operating under the influence of alcohol or drugs.
4. Operating in a swimming area with swimmers present.
5. Towing water skiers where obstructions exist or where a fall might cause them to be hit by other vessels.
6. Operating in the vicinity of dams when such areas are known to be hazardous.
7. Cutting through a regatta or marine parade in progress.

Overloading

- Consider water and existing conditions.
- Never load a boat with passenger or cargo beyond its safe carrying capacity.



Boat Capacity Plate

Formulas for Safe Loading

Horsepower Capacity

Small, flat-bottom boats. Multiply boat length (feet) times transom width (feet).

If answer is:	Maximum HP is:
35 or less	3
36-39	5
40-42	7.5
43-45	10
46-52	15

Note: For flat-bottom, hard chine boats, with an answer of 52 or less, reduce one capacity increment (e.g. 5 to 3).

Persons Capacity

Average weight per person: 150 lbs.

$$\frac{\text{Boat length} \times \text{boat width}}{15} = \text{Number of people}$$

Boat length and width are measured in feet. Round fractions DOWN to next lower person.

Speed Regulations

- When no limits are posted, operate the boat so it will not endanger others.
- The boat must be able to stop safely within the clear distance ahead.
- When passing near marinas, fishing areas, swimming areas, a vessel servicing a buoy, or similar places, reduce speed. Skippers are responsible for damage caused by wakes.

In many states, speed is limited by law for certain conditions and areas. The maximum speed for boats within 100 feet of a swimmer (but not a water skier), and within 200 feet of a swimming beach or float, diving platform or life line, or passenger landing being used, is 5 miles per hour.

Pollution Regulations

- If you have a marine head (toilet) installed on your boat, it must be U.S. Coast Guard certified and of a type authorized for the area where you will be boating. Check with the U.S. Coast Guard and state boating officials for the latest information. These regulations do not apply to portable toilets.
- It is a violation of the Federal Pollution Control Act to pump or discharge any kind of oil into navigable waters. Oil must not be dumped into dumped into the bilge of a boat. Skippers caught with oil in the bilge of their boats must be able to show how they intend to dispose of it properly. Every boat that is 26 feet or longer must display a 5"x8" sign near the bilge pump control station stating the regulations of the Federal Pollution Control Act.
- The dumping of garbage into the sea has become a worldwide problem. Plastic refuse dumped in the water can kill fish and marine wildlife, and can foul vessel propellers and cooling water intakes.

DISCHARGE OF OIL
PROHIBITED
The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters and contiguous zone of the United States if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of $5,000.
Presented as a public service by the AEtna Insurance Company

Trash Disposal

It is illegal to dump plastic trash anywhere into the ocean or into the navigable waters of the United States. Any violation may result in a civil penalty up to $25,000 or criminal penalty up to $50,000 or 5 years imprisonment. Regional, state or local regulations may further restrict dumping garbage.

Less than 3 miles offshore and inland water.	It is illegal to dump:	Plastic, rags, glass, food, metal, crockery, dunnage and lining and packing material that floats.
3-12 miles offshore.	It is illegal to dump:	Plastic, rags*, glass*, food*, metal*, crockery*, dunnage and lining and packing material that floats. **unless ground smaller than 1 inch*
12-25 miles offshore.	It is illegal to dump:	Plastic, dunnage and packing materials that float.
More than 25 miles offshore.	It is illegal to dump:	Plastic.

This placard must be posted on all boats 26 feet or more in length.

Navigation Rules

A word of encouragement:

You will not be expected to quote the Navigation Rules. However, others have the right to assume that you know what you are doing. If you fail to observe the rules, not knowing them won't be a valid defense!

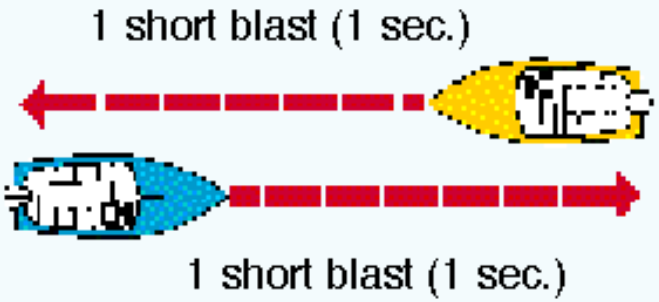
The Navigation Rules state that due regard shall be taken to avoid all dangers of navigation and collision and any other special circumstances.
These include limitations of the vessels involved which may make a departure from these Rules necessary to avoid immediate danger. Any actions taken to avoid collision should be positive, made in ample time with due regard to good seamanship.

- **When two powerboats are meeting head-on,** or nearly so, either can signal their intention of passing port to port using one short blast. The other vessel should signal agreement by signaling one short blast. For starboard passing, each should signal using two short blasts. If you think it is unsafe to pass as signaled, sound the danger signal of five or more short blasts.

- **When a starboard to starboard passing situation** is desired, either vessel shall signal two short blasts. The other vessel shall answer promptly with two short blasts, and each shall pass with the other vessel on its starboard (right).

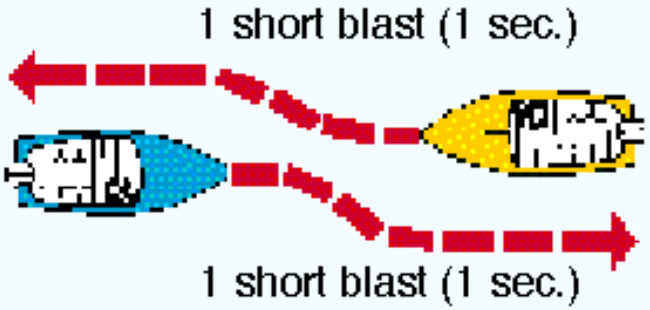
Meeting Head to Head

Passing port to port



Passing starboard to starboard

Meeting head to head

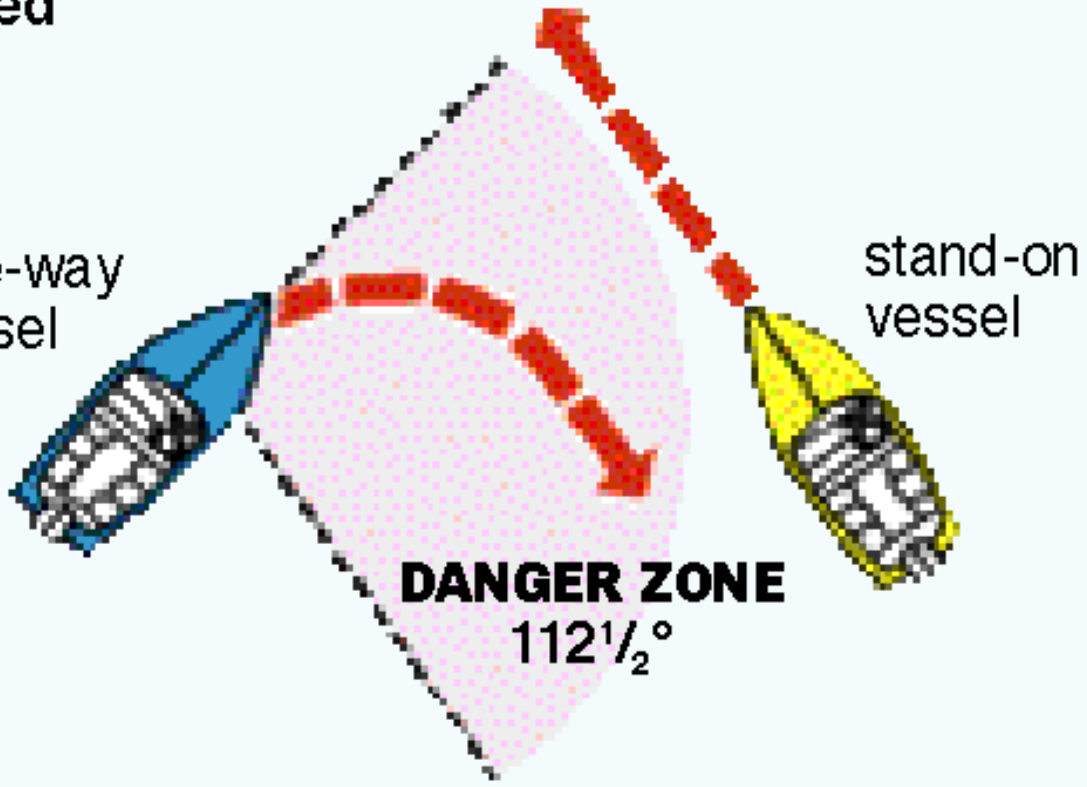


- **Approaching at right angles, or nearly so,** is a crossing situation. The motorboat on the right is the **stand-on vessel**. It must hold course and speed. The other boat is the **give-way vessel** and should alter its course or speed to keep clear. It can do this by turning to starboard (right) and passing astern of (behind) the stand-on vessel, or by slowing, stopping or reversing. A vessel does not signal when another vessel is seen crossing directly ahead. The sound signal is to be used only during passing or to signal danger.

- **When going in the same direction and a** vessel wants to pass, it must give the sound signal indicated in the illustration on slide 46.

Crossing

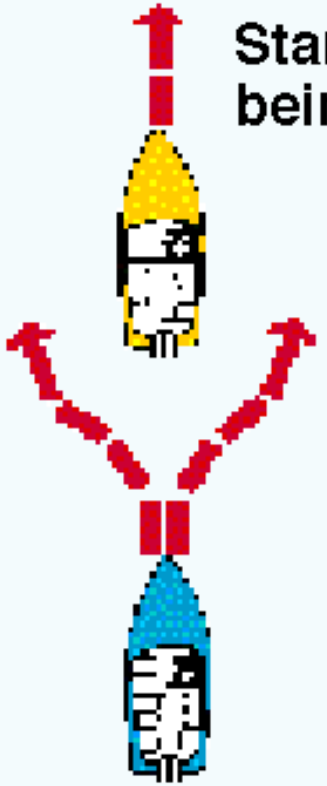
Stand-on vessel holds course and speed



- **A motorboat approaching another from the stern (from behind)** shall keep out of the way of the overtaken vessel. The vessel being overtaken shall hold its course and speed.
- **If it is not safe to pass,** the stand-on vessel shall indicate by sounding five or more short, rapid blasts. This is the danger signal. It can be used on both Inland and International waters.
- **Any time there is danger of collision,** the danger signal shall be sounded. Both vessels shall slow or stop until signals for passing with safety are sounded and understood.

Overtaking

Inland Rules:
"I want to pass you on your port side."
2 short blasts
(1 sec.)



Stand-on vessel being overtaken

Inland Rules:
"I want to pass you on your starboard side."
1 short blast
(1 sec.)

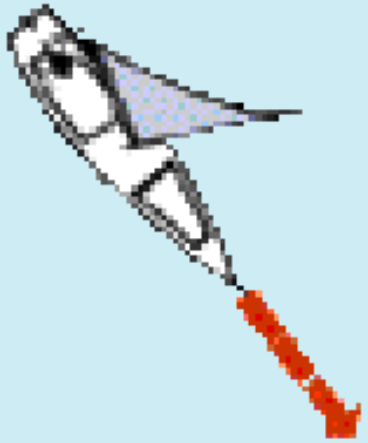
give-way vessel overtaking

Exceptions: Sailboats and Other Vessels

- Sailboats and boats propelled by oars and paddles cannot move or change course as quickly as a motorboat. In most situations, a powerboat must yield to these boats and others less maneuverable. The only exception is when a boat under sail or a non-powered boat passes a motorboat. In that case, the motorboat becomes the stand-on vessel. The passing boat must stay clear and not interfere with the course of the first boat.

- Large, deep draft vessels in narrow channels also have the right-of-way since they cannot maneuver quickly or easily. Common sense would also keep you out of their way as it may take a mile or more to stop a large cargo ship. A vessel moving at 10 knots travels 1,000 feet per minute. The best advice is to stay clear.

Meeting Non-Powered Boats



Holds course and speed.

Motorboats must stay clear of boats under sail

Other Situations

- Under Inland and International Rules, a motorboat nearing a bend where vessels cannot be seen shall signal with one prolonged blast (four to six seconds). This same signal should be answered by any boat within hearing distance.
- Motorboats shall keep to the right side of narrow channels whenever safe.
- Motorboats shall give and answer passing signals when in sight of each other and in danger of collision. Unnecessary use of sound signals is prohibited.
- A vessel leaving a dock should sound one prolonged blast.
- A vessel backing down should sound three short blasts. This means "my engines are in reverse."

Sounding Fog Signals

- Navigation rules require any vessel that is underway in areas of poor or reduced visibility to sound a fog signal. This signal should be sounded at least every two minutes. Poor visibility can be caused by fog, mist, falling snow, or heavy rainstorms.
- Motorboat operators must sound one prolonged blast (four to six seconds in length). Sailboat operators must sound one prolonged blast plus two short blasts (each lasting one second).
- Vessels that are towing or pushing another vessel shall sound one prolonged blast followed by two short blasts. The towed vessel must sound one prolonged followed by three short blasts every two minutes. This shall be sounded immediately after the signal made by the towing vessel.
- A motorboat hearing a fog signal forward shall slow or stop engines and use caution until the danger of collision is over.

  When anchored in an area of poor visibility, you must ring a bell rapidly for five seconds at one-minute intervals. Remember these rules when caught in fog!

U.S. Aids to Navigation

Seafarers use the phrase *"red right returning"* to remind them of their correct course between red and green buoys when returning to the harbor. It means that red buoys always mark the right side of the channel when returning from the open sea (or going upstream in a river). The opposite also holds true. When leaving port heading downstream toward the sea, red buoys are on the left and green buoys are on the right. *Red buoys are always even-numbered. Green buoys are odd-numbered.*

U.S. Aids to Navigation

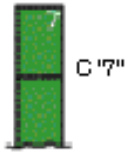
Lateral Aids

Lateral aids marking the sides of channels as seen when entering from seaward.

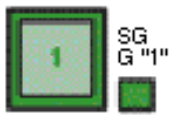
Port Side
Odd Numbers

Lighted buoy
(green light
only)

or

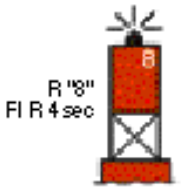


Can buoy
(unlighted)



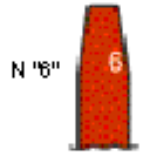
Daymark

Starboard Side
Even Numbers

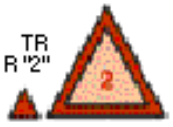


Lighted buoy
(red light
only)

or



Nun buoy
(unlighted)



Daymark

Safe water aids marking mid-channels and safe water.

(No numbers — may be lettered.)

Lighted (white
light)

or

Spherical buoy
(unlighted)

Daymark

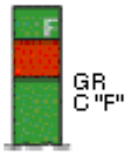
Red-Striped Buoy

Preferred channel aids.
(No numbers — may be lettered.)

Preferred
Channel
to Starboard

Lighted buoy
(green light only)

or



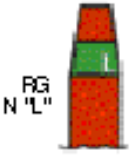
Can buoy
(unlighted)

Daymark

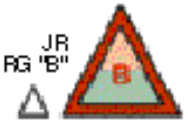
Preferred
Channel
to Port

Lighted buoy
(red light
only)

or



Nun buoy
(unlighted)



Daymark

Regulatory Markers

Information

For displaying information such as directions, distances, locations, etc.

Boat Exclusion Area

Explanation may be placed outside the crossed diamond shape, such as dam, rapids, swim area, etc.

Danger

The nature of danger may be indicated inside the diamond shape, such as rock, wreck, shoal, dam, etc.

Controlled Area

Type of control is in the circle, such as slow, no wake, anchoring, etc.

Buoy used to display regulatory markers. ***May show white light. May be lettered.***

PART 4: BASIC SEAMANSHIP

Preparation

When organizing your first cruise, there are many things to consider to make it safe and enjoyable. Like airline pilots, you should follow a checklist. Make sure to check for any local hazards and have up-to-date charts. If you have a problem on the water, you can't get out and walk away.

Boating Supplies Checklist

Use the following boating supplies checklist as a guide for the materials you should have on a boating trip. Add to this list as required. The items you will actually need may vary depending on the type of boat and water you will be in, as well as the boating activity you and your guests plan to enjoy.

- ✓ Coast Guard approved PFDs for each person on board. They must be properly sized and in good condition. For boats 16 feet and over, you must carry an additional throwable device.
- ✓ Approved, fully-charged fire extinguisher(s) for motorboats.
- ✓ Bell or whistle (as required).
- ✓ Visual distress signalling devices (recommended even in areas where not required).
- ✓ Paddles or oars.
- ✓ Anchor and anchor line.
- ✓ Tool kit, spare parts and flashlight.
- ✓ Any needed charts, tide table, current table, navigation equipment.
- ✓ Make sure everyone wears boat shoes.
- ✓ For longer outings or outings to a remote location, other items such as food, water, and survival equipment could be added to the checklist.

Boating Operation Checklist

Safe operation of a boat depends greatly on proper maintenance and preparation. The actions of the operator and passengers are also important in ensuring a safe and enjoyable outing. The checklist below includes items which can determine the safe outcome of your trip. Some of these items will be the same, no matter what kind of boating you do. However, to make sure all points are covered, create your own checklist and add to it as experience indicates.

- ✓ Full fuel tanks.
- ✓ Lights and horn working.
- ✓ Boat checked for leaks, bailed out, boat plug in.
- ✓ Fuel lines and tank checked for leaks.
- ✓ Weather and water conditions suitable.
- ✓ All gear and supplies properly stowed and secure.
- ✓ Motor in good operating condition.
- ✓ Propeller in good condition, lower unit free of weeds and debris.
- ✓ Passengers seated and briefed on emergency procedures. Their PFDs should be checked for fit.
- ✓ Operator alert, sober, and ready.
- ✓ File a float plan with a responsible person ashore.

Loading

If you use a checklist in loading your boat, you'll make sure all the equipment you need is on board. To prevent capsizing a small boat, hand equipment to someone in the boat. Don't carry equipment aboard. Keep deck areas clear. When loading, stow all supplies securely, and well out of the way. Fasten gear to prevent shifting. Distribute all weight evenly fore and aft, as well as side to side. Never overload a boat. Its stability is greatly affected by weight.

Boarding

- When your guests are ready to board, help them aboard and show them where to sit. Help them put on and adjust their PFDs properly. Make sure to hold the boat as steady as possible while boarding. Make sure guests are briefed on emergency procedures; location of fire extinguishers and first aid kits, line handling, falls overboard procedures, anchoring procedures, rough weather and other emergency procedures.
- When your guests are aboard, make sure their weight is distributed evenly fore and aft and side to side to keep the boat in trim. Do not exceed the total weight and number of people listed on the boat's capacity plate.

Boating Float Plan

When you plan to boat, especially on larger waters, it is a good idea to leave information with friends or relatives. The boating float plan is designed to assist in locating you and your boat if something should happen. Leave this plan with the local marina operator, one of your relatives, or a close friend. (Be sure to cancel the plan when you return.)

Float Plan

1. Description of boat: _____
   - A. Boat number and/or name: _____
   - B. Size: _____
   - C. Make: _____
   - D. Capacity: _____
   - E. Number of engines: _____
2. Number of persons on board: _____
   Names and addresses: _____
   _____
   _____
3. Radio equipment: _____
   - A. Ship to shore: _____
   - B. Citizen's band: _____
   - C. Channel monitored: _____
4. Trip plan: _____
   From: _____
   Via: _____
   Estimated time of arrival: _____
   Departure time: _____
5. If not at destination by: _____
   Notify: _____
6. If emergency arises: _____
   Contact Coast Guard at: _____
   Signed: _____

Skipper's Duties When Underway

When underway, the skipper is responsible for the safety of all guests, the boat, and any damage the boat's wake may cause. When underway, always:

1. Be thoroughly familiar with the way the boat handles. Know the stopping distances, turning radius, and most efficient cruise speed.
2. Avoid taking unnecessary risks that could endanger life, limb, or property (negligent operation).
3. Know your position and know where you are going.
4. Keep an eye out for changing weather conditions and be prepared to act if the water or weather conditions require.
5. Know and practice the rules of the road.
6. Stop to render assistance to others in danger or distress. The Good Samaritan Rule in the Federal Boat Safety Act of 1971 will protect you from liability if you act reasonably and prudently.
7. Exercise courtesy and common sense. This will make your trip safer and more enjoyable.
8. Use the following rule to prevent running out of fuel:
   ⅓ going out, ⅓ coming back, ⅓ reserve.

Boat Operation

Know your boat's most efficient cruise speed. In a large, displacement hull boat, such as a large sailboat or trawler, adding power beyond normal cruise speed will burn considerably more fuel for a small increase in speed. In runabouts and other planing hull boats, the most efficient cruise speed is approximately 75-percent throttle (3,000-3,800 rpm) for an outboard engine, and about 60-percent throttle (3,000 rpm) for a stern drive. For a comfortable, slower cruise speed, add throttle until you get on a plane and then reduce throttle to the lowest setting that will keep you comfortable on a plane.

Basic Knot Tying

Square Knot. Simple to make, the square knot is used for many applications for light duty work.

Bowline. Handiest of the knots, the bowline is probably the most difficult of those presented here. Use it whenever an eye or loop is needed. The bowline will neither slip or jam.

The **Anchor Bend** is used to fasten a line to a ring or anchor. It is also called a fisherman's knot.

Clove Hitch and Half Hitch. The clove hitch is simply two loops with an end tucked under. This knot is used to temporarily secure a boat to a piling or similar structure. To secure the boat for longer periods use two half hitches to lock the clove hitch.

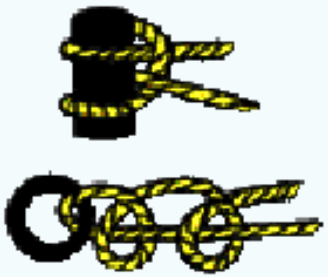
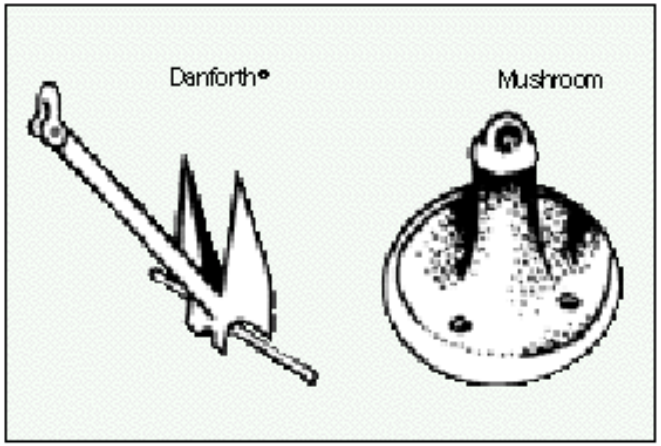


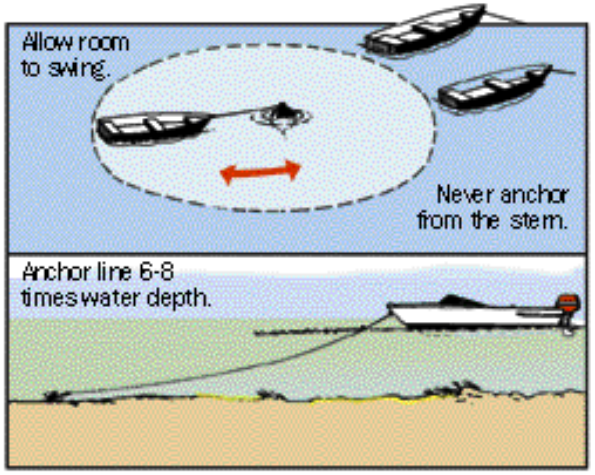
Figure Eight. This knot is principally used as a stopping knot. It is placed at the end of a line to keep it from running through a block, jam cleat or other opening. The figure eight can also be used temporarily in place of "whipping" to prevent a line from unraveling.

Anchoring

- Anchoring is done for two principal reasons: first to stop for fishing, swimming, or an overnight stay; and secondly, to keep you from running aground in bad weather or as a result of engine failure.
- The first step is selecting the proper anchor and anchor line. The most commonly used anchors on small boats are Danforth® or mushroom anchors.



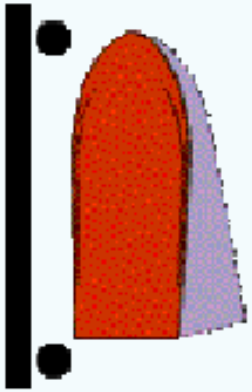
- For a lightweight anchor to work properly, you should attach to it a three- to six-foot length of chain. The chain will stand up to the abrasion of sand, rock, or mud on the bottom much better than a fiber line. It should be galvanized to reduce corrosion. Next, attach a suitable length of nylon anchor line to the other end of the chain. The nylon will stretch under a heavy strain cushioning the impact of waves or wind on both the boat and the anchor.



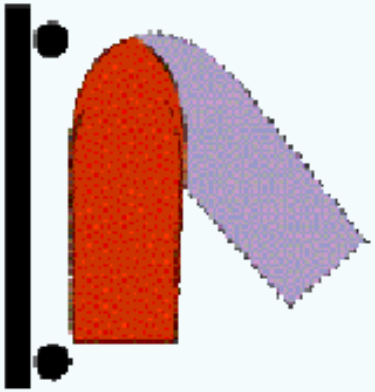
- To anchor, select a well protected area, preferably with a flat bottom. Approach this spot slowly, going into the wind or current. When you get to the spot where you want to anchor, stop the boat, slowly lower the anchor to the bottom, and slowly back away. Don't throw the anchor over, as it will tend to foul the anchor and you'll have to start over. Slowly let out about six to eight times as much line as the depth of the water, preferably with a turn of line around a cleat. Secure the anchor line and reverse the engine to pull on the anchor to make sure it is holding.
- To get underway, move forward until the anchor line is straight up and down. Pulling straight up, you should be able to break the anchor free.

Docking

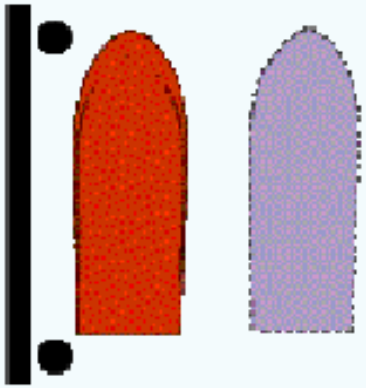
In order to get a feel for how the wind and current affect your boat, you should practice docking to an anchored float in open water. An inexpensive float such as a plastic bleach bottle anchored with a line and small weight can be used.



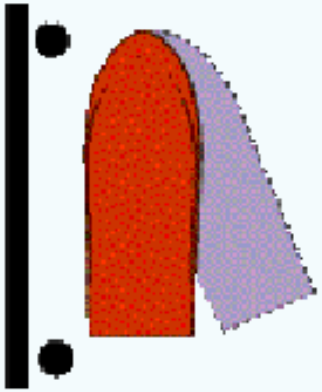
Without wind or current. If there is no wind or current, approach the dock slowly at a 10° to 20° angle. Have fenders and mooring lines ready. If someone is on the dock, throw your bow line and have it secured.



With wind or current from the dock.
If the wind or current is pushing you away from the dock, use a sharper approach angle. Secure the bow line and use the engine to swing the stern in.



With wind or current toward the dock.
If the wind or current is pushing you toward the dock, approach parallel to the dock and allow the wind and current to push you to the dock.



Into the wind or current.
If you must approach the dock downwind or down current, use a slow speed and shallow angle. Be ready to use reverse to stop and to maintain your position. In this case, you should secure the stern line first.

Emergency Repairs

Broken Drive Belt. If a replacement is not available, tie a piece of line or rope around pulleys and secure with a square knot.

Broken Pipe or Hose. Wrap the break with duct tape.

Basic Checks. If your engine fails, make these three basic checks before taking it all apart or calling for help:

1. Fuel tank is not empty.
2. The boat is not aground.
3. The propeller is not fouled with seaweed, rope, or fishing line, and the drive pin hasn't sheared.

Engine Oil Leak. Simply catch the oil in a pan and pour it back in the engine.

Maintenance

Maintaining your vessel in good working condition is an important safety habit. Marinas can be far apart and a breakdown could leave you stranded.

- Keep the engine well tuned. On inboard and stern drive motors, check the oil level each time you set out. The owner's manual will indicate how often the oil should be changed.
- Check the fluid level in the battery and have it recharged if it is necessary. See that the battery terminal connections are tight, clean and free of corrosion.
- The exterior of the engine should be kept as clean as possible, since grease and oil build-up absorbs moisture which conducts electricity.
- Generally check for loose hoses, nuts, bolts, screws, or anything else which must be tightened, repaired or replaced.

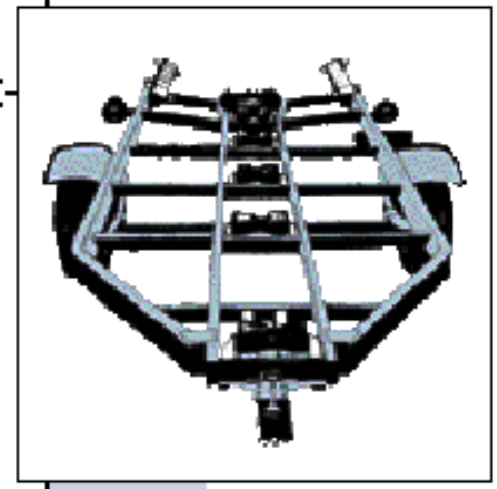
Security

Lock it or lose it is the best advice for any boat owner. And sometimes just locking your boat up isn't enough.

- Protect your boat against theft. If the boat is on a trailer, take off one trailer wheel and store it in the trunk of your car. Add a hitch lock so the trailer can't be towed away easily.
- Don't leave ignition keys on the boat.
- Don't tie up at unattended or poorly-lighted docks. When you're not using your boat, shut off the fuel line or remove the battery. Install a hidden ignition switch. It isn't easy to steal a boat that won't run.
- Paint your boat's name on the hull or transom.
- Keep extra equipment and accessories out of sight. Take expensive equipment home with you.
- Record your boat's HIN and registration numbers. Note make, model and serial numbers of hull, motors and electronic equipment. Keep a list at home in a safe place to help identify your boat if it is stolen.

Trailering

Your boat trailer is an important part of your boating equipment. Normally, the length of the boat determines the length of the trailer. The beam (width) determines the width of the trailer. There should be proper support for the boat's bottom. Most trailers have adjustable rubber rollers with nylon bushings or wooden chocks which are cushioned.



Trailer Loading

The trailer must be strong enough to carry the weight that will be placed on it. The load capacity of a boat trailer should not be exceeded. Most trailers will have a data plate that states the maximum load capacity and the correct specifications for the tires. If your trailer does not have such a plate, consult other sources or your dealer for this information.

Trailer Safety Precautions

Before leaving home:

1. Be sure that the boat is secured properly on the trailer.
2. Inspect all lines, tie-downs, and the winch. Tighten as necessary and replace any that show signs of fraying or strand separation.
3. Determine that all trailer lights are operating satisfactorily.
4. Test the braking system.
5. Inspect the hitch and safety chain.
6. Check tire pressure and lug nuts.
7. Tilt and secure the motor to increase road clearance.
8. Take a trailer jack.

On the road:

1. Drive carefully, allowing for the extra length of the car and trailer when negotiating turns and when passing.
2. Allow more time for stopping.
3. Watch speed limits.
4. Pull well off the road periodically and walk completely around the rig. Examine the tires and wheel bearings for overheating, test the tie-downs, and check any gear which is being carried in the boat.

PART 5: ACCIDENTS

- Most boating fatalities are the result of a capsizing or falls overboard.
- Most non-fatal boating accidents are the result of a collision with another boat or an object in the water, such as rocks, pilings, or debris. A little basic boating knowledge, common sense, and courtesy could prevent most accidents.
- Most boating fatalities occur in small, open boats on smalL inland bodies of water in mid to late afternoon, on weekends during the summer months. The weather is normally good, with calm winds and water, and good visibility.
- Approximately 90-percent of the fatalities are the result of drowning.
- Nearly 80-percent of those who die in boating accidents were not wearing a PFD.
- Most accidents, capsizings, falls overboard, and collisions are a sudden, unexpected occurrence. You have little if any warning ahead of time to prepare for it. **Your PFD could save your life, but it will be of little use if you don't wear it.**

Capsizing

- In a small boat, the weight of the passengers is greater than the weight of the boat. Therefore the action of this "live ballast" has a great effect on the stability of the boat. The capacity plate, located near the operator's position, will tell you the number of people, total weight, and maximum power your boat can safely accommodate.
  Do not exceed these limits. Load the boat evenly fore and aft and side to side. Keep the weight low. An overloaded or overpowered boat is less stable and more likely to capsize.
- Should the boat capsize, grab a PFD if you're not wearing one. Do not try to swim to shore. Stay with the boat until help arrives. The shore is usually farther than it looks and most boats have built in flotation. It is easier to spot an overturned boat in the water than a swimmer. Only leave the safety of the boat as a last resort after carefully assessing the situation.

Falls Overboard

In the event of a person falling overboard, follow these procedures:

1. Toss the person a life saving device or floating cushion even if they can swim. Use whatever is nearest. Time is essential.
2. If underway, slow the boat and keep the person in view. Other persons on board should act as lookouts and point at the person in the water. At night, direct the best possible light source on the victim.
3. Try to approach the person from downwind or into the waves. Always use common sense and good judgment. Consider existing conditions such as water temperature, physical condition and ability of the victim. Also assess what other help is available.
4. In the event the victim is injured, and someone aboard is capable, a rescuer may put on a PFD with a safety line attached and enter the water to assist the person needing help.
5. Assist the person in boarding the boat. It is difficult to climb into a boat from the water. If a person is hurt or cold, help may be required.
6. Depending on the size and construction of the boat, the person should normally be brought in over the stern.
7. Always turn off the motor when alongside someone in the water.

Collisions

To avoid a collision, keep a sharp lookout for other boats, know and follow the rules of the road, and be courteous. Studies have shown that fatigue caused by the glare, motion, noise, and vibration of a day on the water, will reduce your reaction time to nearly the same level as if you were legally intoxicated. So on your way home, slow up and be extra cautious. You will not be able to recognize and react to hazardous situations as quickly as you normally would.

Running Aground

To keep from running aground, check for local hazards and use an up-to-date navigation chart. If you do run aground, make sure everyone dons a PFD. Notify authorities of your situation.

In a small boat, getting ungrounded may be as easy as stepping out and pushing your boat back into deeper water. Larger boats may have to wait for a higher tide or a tow to get ungrounded.

In coastal waters running aground can be very dangerous. Waves and tidal action can cause great damage to your boat. Use caution and navigate using up-to-date charts, particularly around inlets and jetties.

Emergencies

- Always be ready to help others if possible, but don't take unnecessary risks. Use equipment to save lives, but never risk a life to save equipment. Don't panic. Approach the accident cautiously and get life saving devices ready. Watch for people in the water. Toss life saving devices to those who do not have them. Give help first to anyone who seems to be having trouble. Talk to the people in the water. They can tell you if they are all right.
- To get a person out of the water, approach slowly and stop the motor when alongside. Try to bring the person in, preferably over the stern. Balance the boat so it does not roll too much when people crawl aboard. Do not overload the boat.
- If there are more people requiring help than the boat will safely hold, bring aboard those most in need of help. Be sure all others have adequate life saving devices.

Alcohol Facts

Contrary to popular belief, alcohol isn't digested like food, but is absorbed directly into the bloodstream through the stomach walls. Food in your stomach slows down alcohol absorption, but the final amount of absorption is the same. The liver burns or oxidizes alcohol out of your body at a steady rate. If you drink faster than the alcohol can be burned, there will be a greater level of alcohol in your blood. Blood Alcohol Content (BAC) may be estimated by referring to the chart shown here.

Blood Alcohol Content Chart

Body Weight in Pounds	Number of Drinks in a Two Hour Period 12 oz. beer – 5 oz. wine – 1 oz. 80 proof liquor								
100	1	2	3	4	5	6	7	8	9
120	1	2	3	4	5	6	7	8	9
140	1	2	3	4	5	6	7	8	9
160	1	2	3	4	5	6	7	8	9
180	1	2	3	4	5	6	7	8	9
200	1	2	3	4	5	6	7	8	9
220	1	2	3	4	5	6	7	8	9
240	1	2	3	4	5	6	7	8	9

BAC to .05%	**Be Careful** - Loss of judgment and coordination.
BAC .05% to .10%	**Abilities Impaired** - Chance of accident increased.
BAC .10% and over	**Do Not Operate a Boat** - High risk of accident.

To learn how drinking affects boating, we must first look at how alcohol affects people. The following effects of alcohol are of particular interest in boating:

Balance

Most people who die in boating accidents either fall out of their boat or capsize their boat and end up in the water. Balance is one of the first things you lose when you consume alcohol. The problem is that you may not notice this reduction in ability and a small, unstable boat is very unforgiving.

Coordination

As the amount of alcohol you drink increases, your ability to coordinate your arm and leg movements is reduced. A drunk boater will have great difficulty trying to swim to a life saving device, let alone put it on, despite their sober ability.

Vision

Since vision provides about 90 percent of the information we use in a traffic situation or driving a boat, it is important to understand how it is affected by alcohol.

- The pupils of the eye act like the shutter on a camera. As you drink alcohol, the pupils' ability to control the amount of light entering the eye is diminished, which reduces your ability to see, particularly at night.
- Alcohol is a relaxant and affects the control of the small musdes that focus both eyes on the same object. The results can be fuzzy vision or double vision. If you are seeing double, your brain may suppress one image; you will only be seeing with one eye; you will lose depth perception.
- Alcohol reduces peripheral (side) vision. As speed increases, your ability to see to the side decreases, with the final result being tunnel vision: the ability to see and react to only those objects directly ahead of you.
- Alcohol reduces your ability to distinguish between colors, particularly red and green, such as the running lights on a boat.

Combining all these effects, the wrong amount of light entering the eye, poor focus or double vision, loss of depth perception, tunnel vision, and the inability to distinguish color, is very dangerous.

Judgment and Risk Taking

As in cases of fatigue and hypothermia, one of the first things you lose when you start to drink is your judgment. After a drink or two, people tend to loosen up, lose their inhibitions and are more likely to try to perform daring and bold acts. Since their judgment is already affected, they may not even be aware of their bold actions.

Hypothermia and Alcohol

Contrary to popular belief, a couple of shots of brandy will not warm you up. You may feel warmer since the alcohol opens up the blood vessels close to the skin, but actually, you are greatly increasing your heat loss.

Alcohol Facts and Myths

Although alcohol has been used since about 8000 B.C., there are still many myths about alcohol that are not true.

Myth: *Beer is less intoxicating than other alcoholic beverages.*

Fact: One 12-ounce can of beer, one 5-ounce glass of wine, or one shot of 80-proof liquor all contain about the same amount of alcohol and have the same effect.

Myth: *A cold shower, a walk in the fresh air or black coffee will sober you up.*

Fact: Once you have consumed alcohol, nothing will sober you up except time. Your body will burn about one ounce of alcohol per hour. If you are legally drunk, it will take about seven hours to sober up.

Myth: *It's easy to tell if someone is too drunk to drive.*

Fact: Many experienced drinkers have learned to compensate for alcohol's outwardly visual effects and can hide their intoxicated condition.

Myth: *You are the best person to judge whether you are fit to drive.*

Fact: One of the first things you lose when drinking is your judgment.

Visual Distress Signals

- To assist rescuers in finding and aiding boaters in distress, the U.S. Coast Guard requires all boats operating in U.S. coastal waters to carry visual distress signals. Coastal waters include the Great Lakes, the oceans, and any bay or sound that empties into the ocean. In addition, a river that has a mouth over two miles across is considered to be coastal waters from the mouth to a point where it narrows to two miles. Rivers, streams, and inland lakes, except the Great Lakes, are not considered to be coastal waters.

- Boats 16 feet or longer in length must carry three daytime signals and three nighttime signals. However, three signals suitable for both day or night use may be substituted if desired.

There are exceptions for certain boats during the daytime. The following only need to carry night signal devices when operated at night:

1. Recreational boats less than 16 feet in length.
2. Manually propelled boats (rowboats, canoes, kayaks).
3. Open sailboats under 26 feet long, with no motors attached.
4. Boats participating in organized marine events.

Visual Distress Signals

day use only

Red Distress Flare (hand)

day and night use

Orange Smoke Signal (hand)

day use only

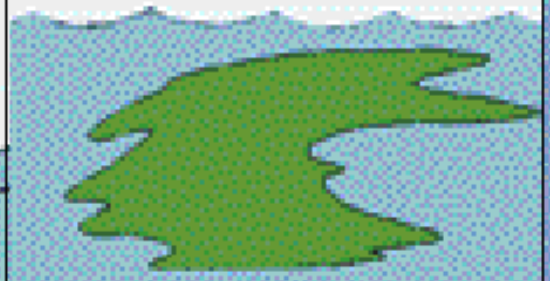
Red Meteor

day and night use

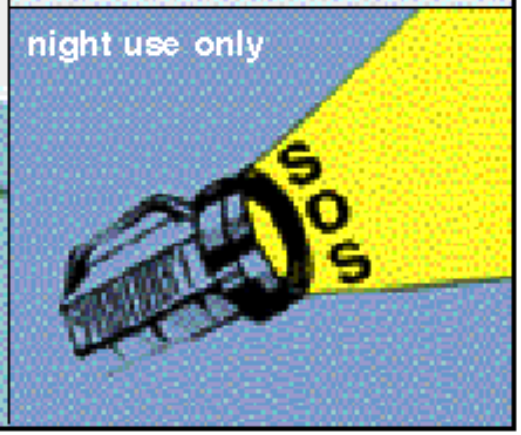
Arm Signals (use bright cloth)

Dye Marker

day use only



night use only



Accident Reporting

The operator of a vessel must submit an accident report form to the office of the State Boating Law Administration for any accident in which:

1. a person dies within 24 hours.
2. a person loses consciousness or receives medical treatment beyond first aid.
3. property damage is more than $500.
4. a person disappears from the vessel in circumstances that indicate injury or death.

In the case of a death or disappearance, the owner or operator should contact the office of the Boating Law Administrator immediately.

A vessel operator involved in an accident must render all practical and necessary assistance possible to the victims without seriously endangering his or her own vessel or the persons aboard.

The operator shall also give his or her name, address, and vessel identification number to the injured person or owner of the damaged property.

Fire Prevention

Fire aboard a boat can be terrifying. A person may have only a moment to act. The importance of having fully-charged fire extinguishers on hand cannot be overemphasized.

Most fires can be prevented. Clean bilges often and maintain proper gear stowage at all times. Whenever a condition may contribute to a fire, correct it at once. While these precautions do not guarantee that a fire will never start, they greatly reduce the possibility.

Fueling

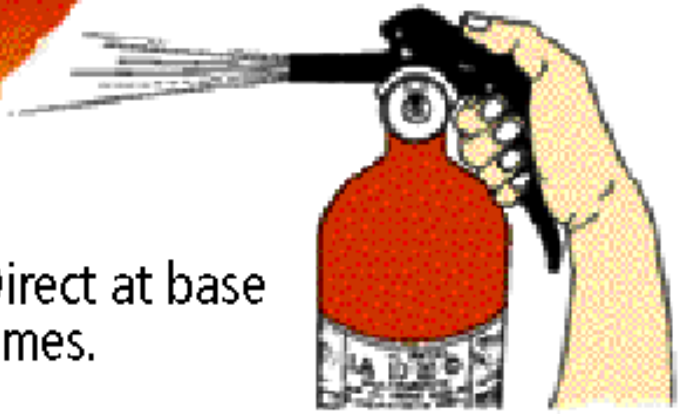
Improper fueling practices are the cause of most fires onboard vessels. Gasoline vapors are heavier than air, and spread rapidly. It is important to check the **bilges and all closed compartments for the presence** of gasoline vapor. The best method is to stick your ***nose*** in the space to detect any vapors.

Follow these steps if fire breaks out while underway:

1. Stop the boat and get everyone in a PFD. Wind from the boat's motion fans the flames.
2. Keep the fire downwind. If the fire is aft, head the bow into the wind. If forward, put the stern into the wind.
3. If the motor catches fire, shut off the fuel supply immediately.
4. Use a fire extinguisher pointed at the base of the flames to fight the fire.

How to Use a Fire Extinguisher

1. Pull pin



2. Direct at base of flames.

First Aid

Learn as much about good boating and safety afloat as possible. Take an approved first aid course from the American Red Cross, Civil Defense, or other organization. Equip your boat with a first aid kit. Include supplies to handle minor accidents and the information needed to use these supplies properly. Remember, the first duty of a skipper is the safety of passengers, crew and boat.

Hypothermia

- Hypothermia is a condition in which the body loses heat faster than it can produce it. This causes a dangerous reduction of the body's inner core temperature.
- Hypothermia results from exposure to wind, cold and wetness.
- A victim of hypothermia may become blue-gray in color.
- Violent shivering develops which may give way to muscle spasms and even loss of the use of arms and legs.
- Confusion and drunken behavior also indicate that a person may be hypothermic.

Hypothermia Chart

If the Water Temp. (F) is . . .	Exhaustion or **Unconsciousness**	Expected Time of Survival is . . .
32.5	Under 15 Min.	Under 15-45 Min.
32.5-40.0	15-30 Min.	30-90 Min.
40-50	30-60 Min.	1-3 Hrs.
50-60	1-2 Hrs.	1-6 Hrs.
60-70	2-7 Hrs.	2-40 Hrs.
70-80	3-12 Hrs.	3-Indefinitely
over 80	Indefinitely	Indefinitely

PART 6: OPERATING TIPS

Weather and Water Conditions

Checking the weather before you leave for a day of boating is important but it will not prevent weather problems. At many times of the year and in different areas of the country, the weather can change rapidly, and even professionals have trouble predicting these changes. Weather changes generally come from the west. While underway, you should continue to check the weather. If you have a marine band radio you can get weather reports on 162.55 mhz or 162.40 mhz, or from local Coast Guard radio stations. If you have a portable radio, tune to a station that gives frequent weather updates.

If you are caught out in foul weather:

1. Reduce speed. Proceed with caution. Put on PFDs.
2. Head for the nearest shore that is safe to approach.
3. Head bow into waves at about a 40° angle. Watch for floating debris.
4. Secure loose items. Have emergency gear ready.
5. Keep bilges free of water. Shift to full fuel tank.
6. Seat passengers on bottom of boat near center line.
7. If your engine fails, anchor the boat. If you don't have an anchor or you are in deep water, use a sea anchor. (A sea anchor is anything that will create drag in the water and hold your bow into the wind. You could use a bucket on a line, a tackle box or another bulky item.)

Tides

In coastal areas, tides are important. They change the water level, in many places six to ten feet and in some areas as much as 20-30 feet. This change in water level can cause you to run aground in areas you have safely navigated just hours before. Tidal change must be taken into account when anchoring and when docking to a fixed dock. Be familiar with the effect changing tides have on your local boating area. Check with local marinas or Coast Guard stations. Learn to read and understand tide tables and current charts.

Navigation

Types of Compasses

While not required by law, an accurate compass is an important and useful piece of equipment on a boat.

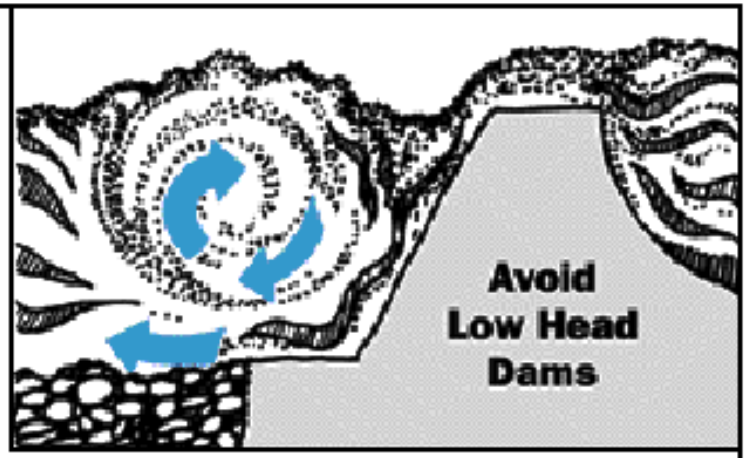
The numbers or letters on the compass card directly under the lubber's line indicate the direction in which the bow of the boat is heading.

Contrary to common belief, the compass card or the needle of the compass does not turn. The needle stands still and the boat along with the frame of the compass turns around it. The lubber's line is attached to the frame. Therefore, you can look at the compass and see which direction you are going by reading the lubber's line against the compass card.

Nautical Charts

Most areas have charts available to help boaters avoid dangers and find their way from one point to another. Waters of the United States, including coastal waterways, bays, rivers, oceans, sounds, and harbors have been charted by the National Oceanic and Atmospheric Administration (NOAA). These nautical charts are available from the National Ocean Service or through local marine suppliers. Charts are the road maps of the waterways. They provide detailed information about water depth, buoys, dangers under the water and over it, as well as an accurate picture of shorelines, waterways, and harbor areas.

Dams



- There are two types of dams (*low head dams* and *conventional dams*) that are dangerous to boaters.
- Low head dams may be the most dangerous since they are not usually recognized as hazardous. Low head dams vary in height from about one foot to several feet.
- Their only purpose is to provide a minimum upstream water level for water inlets or other purposes. Because the drop over a low head dam is so small, many paddlers and other boaters assume they can go over the dam with no danger.
- The upstream water circulation at the base of the dam tends to trap a boat against the face of the dam and hold it there. This circulation can be strong enough to pull a person in a life jacket under water.
- Locate any low head dams in your area and stay away from them.

Locks

Many large dams have navigation locks to allow boats to travel upstream or downstream. The locks are necessary to transfer from one water level to another. Locks were primarily built for commercial use and therefore pleasure craft have a lower priority. If you lock through with larger vessels, be particularly cautious.

The lockmaster controls all movement of vessels through the locks by signaling with traffic lights or horn blasts. Wait for the lockmaster's signal before moving into the lock.

Safety Guidelines for Locks

1. Shut off the motor.
2. Have at least one 150-foot mooring line ready.
3. Hang boat fenders on both sides of the boat.
4. Be ready to pass lines to the lock attendants to secure the craft safely to the lock wall.
5. Follow the attendants' instructions for paying out or taking in lines as the water level rises or falls.
6. When the process is completed, release the lines on instruction from the attendant, wait for the signal to leave, and then proceed slowly out of the lock.

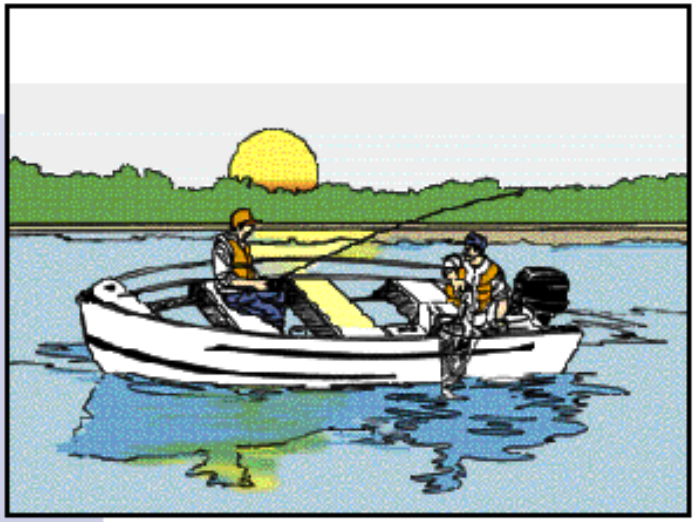
Water Sports

Rowing

Most rowboats have given way to outboard power, but there is still room on the water for boats powered by arm muscle and wooden oars.

Knowing how to handle the oars to provide smooth, even strokes or how to drag the oar to turn the boat can make rowing a graceful performance.

With motor added, the rowboat becomes a power boat and must be numbered according to U.S. Coast Guard and state regulations.



Fishing

If cruising, steer clear of fishermen. They may have lines or nets out which might be cut if you come in too close. Slow down while approaching fishing boats. Don't return to cruising speed until the boats have been passed. If a fishing boat is anchored, a large wake could flip or swamp the boat, upset fishing gear, or pull the anchor loose from the bottom.

Hunting

As in fishing, falling overboard and capsizing in remote places are major potential hazards for hunters on the water.

Always remain seated while shooting from an open boat. This will improve both accuracy and stability. Know the gun's recoil so you won't be surprised or knocked over by the sudden movement. Never anchor from the stern.

Farm Ponds

Farm ponds have the same potential for accidents as large bodies of water.

Supervise children at play. Make sure each child can swim from the center of the pond to shore. A ring life buoy with a line attached should be on shore, ready to throw to someone in the water, if needed.

Diving

- Boaters should be familiar with the "divers down" flag. Displayed on a boat or on a float, this flag indicates that diving activities are taking place.
- Divers should use the flag to mark diving locations and boat operators must be able to identify it.
- If a divers flag is spotted while boating, be careful and do not approach out of curiosity. Maintain a distance of at least 100 feet between the flag and your vessel when boating on inland waters. In bays and open waters, stay at least 300 feet away.
- Also keep a sharp lookout for air bubbles breaking the surface near the boat. It is possible for divers to accidently stray from the safe area of the flag.

Diving Flags

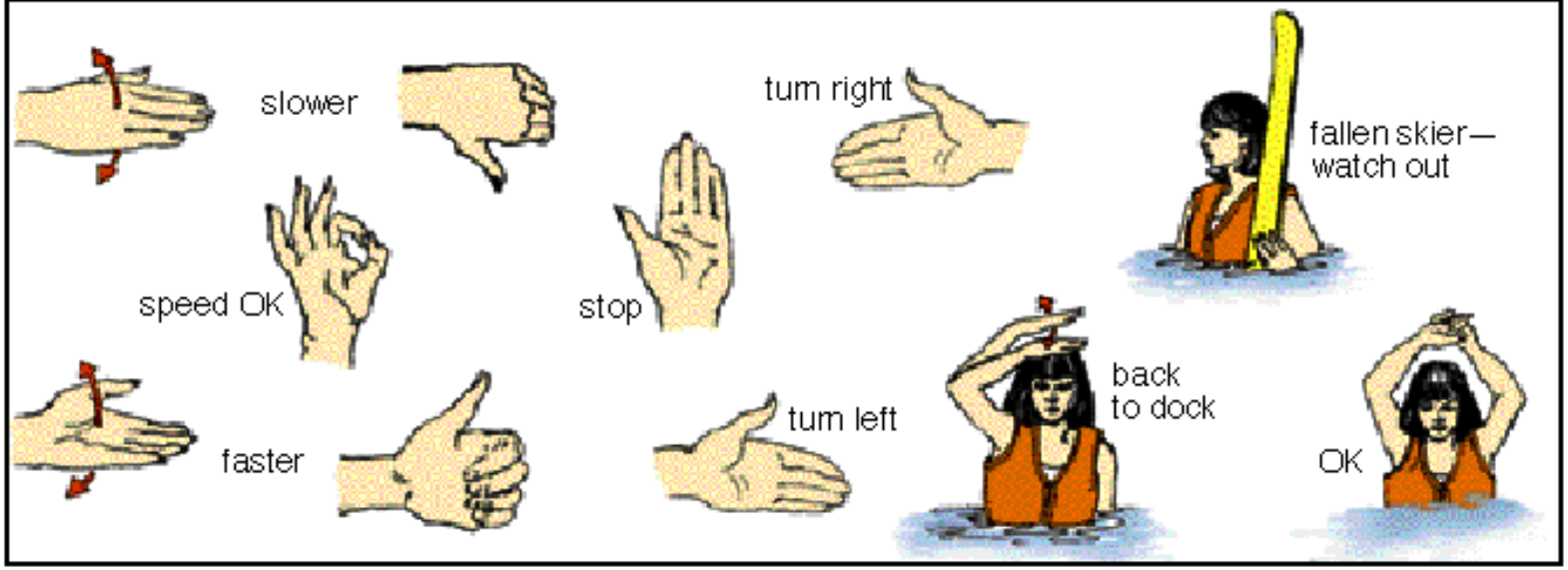
Alpha Flag
Displayed by vessels restricted in their ability to maneuver while engaged in diving operations.

Divers Flag
Used by recreational divers. (Required by law in some states.)

Water Skiing

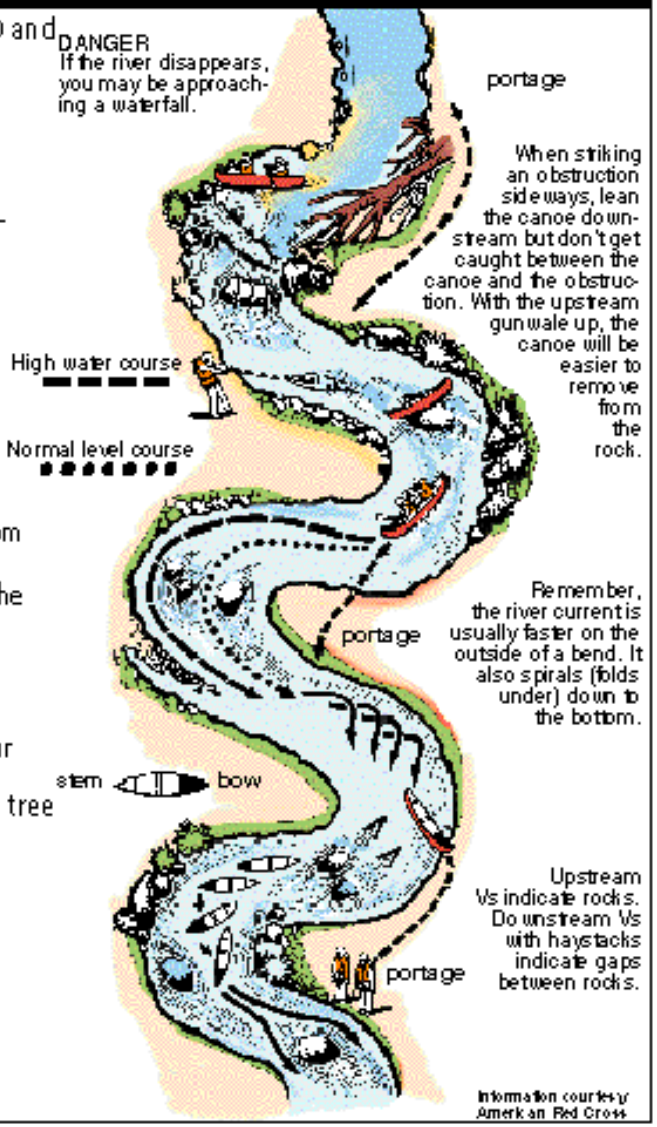
- It is the skipper's duty to see that all water skiing regulations are followed. In many states, the law requires that there be a second person on board to monitor the skier and relay the skier's signals to the boat operator.
- The law requires that there be an approved PFD on board for all passengers, including the skier. Ski belts are not Coast Guard approved. Special Type III PFDs should be worn by the skier.
- When a skier has fallen, circle slowly around to position the tow line for use in getting up again, or in boarding the boat. Do not pull the tow line in front of another boat. To bring a skier aboard, stop the motor and help them board at the stern. Once the skier is aboard, retrieve the skis.

Water skiing Hand Signals



River Running Guidelines

1. Be sure each passenger in the boat wears an approved, properly fitted PFD and a helmet that fits correctly.
2. Don't overload the boat with passengers or gear.
3. Check your equipment before starting out. If using an inflatable raft, make certain there are no punctured chambers.
4. Be familiar enough with the route to plan for proper paddles and/or motors. Pack appropriate camping gear and first aid supplies, warm, easily dried clothing, insect repellent, fishing gear and license, food, tarps, and camera. Do not forget to waterproof your personal gear.
5. Be sure of your skills by starting with an easy run. If possible, go with experienced river runners to learn the basic strokes and movements of the craft through various types of water.
6. Do not boat alone. Three boats are the usual minimum for a white water run. Keep the boat ahead of you in sight.
7. Fasten down all ropes so that there is no danger of becoming entangled in case you overturn.
8. Stop, get out of your boat, and look over all rapids and other danger spots from the shore. If in doubt, carry your boat around the difficulty.
9. Beware of overhanging trees, log jams, brush piles, and other obstacles that the water flows through rather than around. You can be pinned against them, possibly under the water, by the force of the current. Pass them on the safe side.
10. If capsized, stay at the upstream end of the canoe. Your life is more important to save than equipment. If carried by the current, float on your back, keep your toes up and your feet together. Never try to stand up unless the water is too shallow to swim. If a heaving line is tossed, the rescuer should snub it to a tree or boulder.
11. Cold water can be paralyzing to both mind and body. Get out of it quickly. Do not lose your life trying to save your boat or equipment.
12. Be alert to changing weather conditions. Get out of the water before a storm hits.
13. Beach your vessel overnight a safe distance from the river's edge and tie it securely to a tree or large rock in case of flash flooding, etc. When departing, carry it back to the water, do not drag it.
14. When leaving, secure all equipment and carry trash out with you.

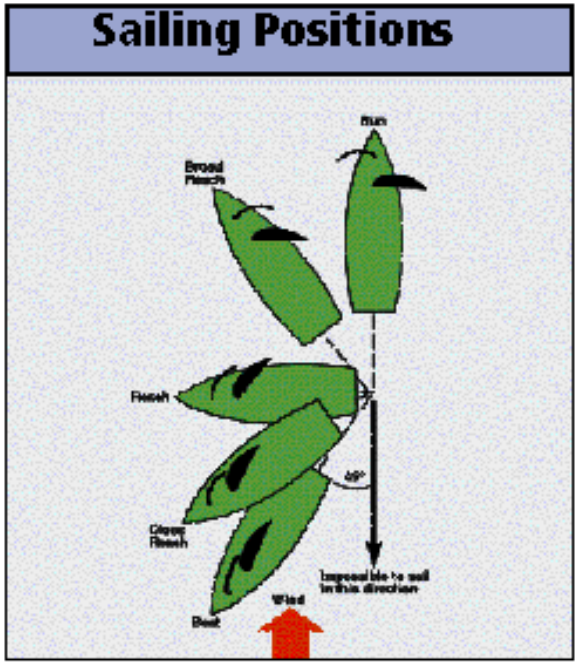

DANGER
If the river disappears, you may be approaching a waterfall.
portage
When striking an obstruction sideways, lean the canoe downstream but don't get caught between the canoe and the obstruction. With the upstream gunwale up, the canoe will be easier to remove from the rock.
High water course
Normal level course
portage
Remember, the river current is usually faster on the outside of a bend. It also spirals (folds under) down to the bottom.
stern
bow
Upstream Vs indicate rocks. Downstream Vs with haystacks indicate gaps between rocks.
portage
Information courtesy American Red Cross

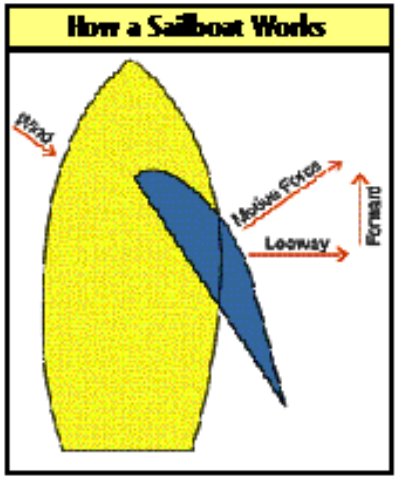
Sailing

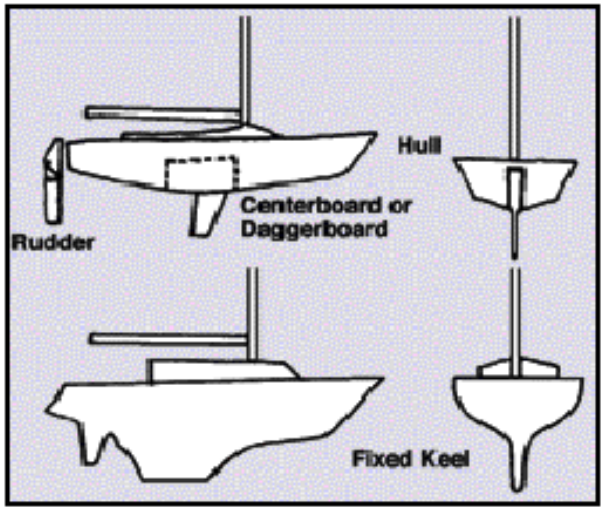
How a Sailboat Sails

Sails have been used to "power" boats for thousands of years, but many people still have trouble understanding how a sailboat works.

- A sailboat has four basic parts: the *hull, sail(s), centerboard (or keel),* and *rudder.*
- The hull is designed to carry the crew, support the mast and rigging, and move through the water easily.
- The sails provide the motive force for a sailboat. The centerboard or keel keeps the boat from being pushed sideways by the wind.
- The rudder is used to steer the sailboat.







Personal Watercraft

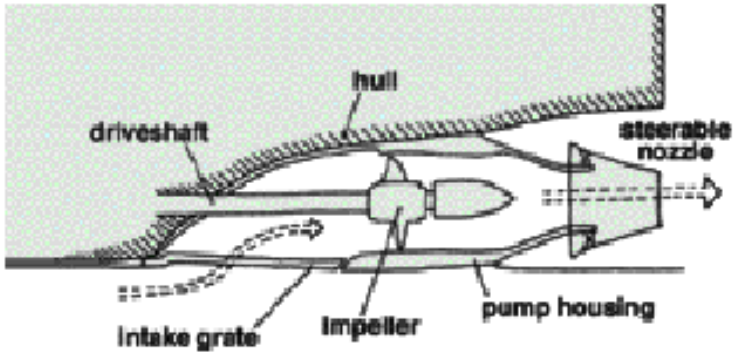
Personal watercraft are small, agile boats which are powered by a completely enclosed engine coupled to a jet pump. They are subject to the same laws and requirements as larger, more conventional boats. This includes the requirement to number (register) your personal watercraft.

Personal watercraft have certain common characteristics. They have an inboard engine with jet drive and they are designed for the operator to safely fall overboard and reboard the vessel. These two features are related. The jet drive system eliminates parts, such as a propeller or rudder, on the outside of the hull. This system presents little risk to riders when falling overboard or reboarding.

Jet Drive Basics

Your personal watercraft is propelled by the action of a jet pump driven by the engine. The jet pump is located at the stern of the boat within the hull. The pump draws water into the housing ahead of an impeller. The impeller pressurizes the water and forces it rearwards through a nozzle.

Jet Drive



Most personal watercraft have a steerable nozzle at the rear of the pump housing. It is controlled by a handlebar or steering wheel which directs the stream of water from left to right. When the operator turns the steering control to the right, the nozzle turns to the right. The force of water pushes the back of the boat left, turning the boat right. This is a basic characteristic of the jet drive system. Keep it in mind while operating a personal watercraft.

Off Throttle Steering

If the engine is not pushing the jet of water, there will be no thrust to steer the craft. Refer to the owner's manual for your particular model for more specific operating instructions. Practice off throttle corrections away from others.

Although jet pumps do not have the same risks as propellers, certain precautions must be observed.

- Keep hands, feet, hair, and clothing away from the pump intake. Never put anything into or near the pump inlet or outlet while the engine is running.
- Never operate your boat in shallow water. Any material, such as sand, sucked up from the bottom can damage the pump or cause injury.

Teaching New Riders

Before allowing anyone to ride your personal watercraft, make sure they understand that a personal watercraft rider has to be as responsible as any other boater. Make sure they know the *Rules of the Road*.

- Make sure they understand the lanyard-type engine cutoff mechanisms, or idle-and-circle systems.
- Be sure they wear a life jacket.
- Make sure the cutoff lanyard is attached (if the watercraft is equipped with one).
- Explain the basic operating features of the watercraft. Give instructions on how to start, turn the vessel, and stop the engine if necessary.
- Understand the importance of obeying no-wake restrictions. If possible, show them what a no-wake buoy or sign looks like and explain the importance of obeying this rule.
- Emphasize the need to stay alert on the water. Many beginners concentrate intently on operating their craft and forget to pay attention to their surroundings. This can be very hazardous. Always look around before turning or you could steer directly into the path of another boat.

Watercraft Pre-Ride Inspection

Check your watercraft before every outing. This will help avoid the dangers of breaking down. Use your personal watercraft owner's manual for specific information. Check the load capacity of your PWC and do not exceed it. Things to check include:

- ✓ **Steering** — Check for proper steering operation.
- ✓ **Throttle control** — Make sure the throttle works freely and returns to the idle position when released.
- ✓ **Jet pump cover** — Check the jet pump cover and inlet grate for looseness.
- ✓ **Ventilate engine compartment** — Open the engine cover. Keep it open for several minutes to vent gasoline fumes.
- ✓ **Fuel leaks** — Check for fuel leaks and gasoline fumes from the tank, fuel lines and carburetor.
- ✓ **Oil leaks** — Check for oil leaks.
- ✓ **Hose connections** — Be sure all hose connections and hose clamps are tight. Check hoses for cracks or deterioration. Replace if necessary.
- ✓ **Drain bilge** — Drain water from the engine compartment. Be sure the bilge system is operating properly.
- ✓ **Fuel level** — Check the fuel tank level. Refill if necessary and turn the fuel valve to ON.
- ✓ **Engine oil level** — Check the oil level gauge and refill if necessary.
- ✓ **Battery** — Make sure that the battery is full and fully charged. Check cable connections to ensure they are tight.
- ✓ **Hull damage** — Inspect the hull for damage.
- ✓ **Engine cover (hood)** — Check that the engine cover latches are secure.
- ✓ **Fire extinguisher** — Be sure you have a fully-charged fire extinguisher.
- ✓ **Stop button** — Start the engine. Run it for a few seconds, and then check that the engine stop button works.
- ✓ **Lanyard switch** — If your watercraft has a shut-off lanyard, or other device, make certain it's on board and working properly.
- ✓ **Rider protection** — Always wear a PFD and appropriate protective gear.
- ✓ **Trailer** — Check your trailer lights, wheel bearings and tires. Secure your watercraft to the trailer. Be sure the engine hood and all latches are secure.

Riding Gear

Riding a personal watercraft is a "wet" sport. You should expect to get wet and even end up overboard at times. Some items are a must. Others you may want to consider for an enjoyable outing.

Personal flotation device — A U.S. Coast Guard approved personal flotation device should be worn by the operator and passenger(s). (This is the law in many states.)

Eye protection — Water spray in your eyes can affect your vision. Wear glasses, goggles or wraparound eye protection.

Foot protection — You should wear foot protection. This will help you keep your footing and avoid scrapes and bruises.

Gloves — Gloves will help you hold on to wet controls. They can also provide protection during docking and loading.

Wet suit — In cold water, you may want to consider a wet suit. Hypothermia is abnormally low body temperature and is a real danger in cold, or even cool, water.

Helmet — A high percentage of injuries are head injuries. A helmet will provide protection.

Operator's Duties When Underway

- Personal watercraft are extremely maneuverable. Using that maneuverability to weave in and out of traffic, jump boat wakes, splash others or swerve at the last moment to avoid a collision is very dangerous and illegal in most states. Before performing any rapid maneuvers, check for other traffic right, left and behind you to prevent a collision.
- An operator is responsible for his or her own safety, the safety of any passenger, the watercraft and any damage the watercraft's wake may cause. When underway, always keep a clear view all around the watercraft.
- Exercise courtesy and common sense. This will make your trip safer and more enjoyable.
- Noise carries farther on water, particularly when it is otherwise quiet. Stay away from shoreline areas with homes, campgrounds or similar areas. Change your operating area often. Do not modify your exhaust if this results in a higher noise level.

Falling Off and Reboarding

Personal watercraft have two different ways to cope with falling off. One allows the engine to continue running at idle and circle slowly. The other type uses an engine shut-off lanyard which shuts off the engine. Both of these rider-recovery techniques require some action by the operator of the personal watercraft.

For circling boats, it is important that the engine idle speed be properly set. See your owner's manual.

Personal watercraft equipped with an engine shut-off lanyard must never be operated without attaching the lanyard properly.